DOCUMENT RESUME

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AUTHOR	Daniels, M. Harry; Karmos, Joseph S.
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IDENTIFIERS	Illinois

ABSTRACT

A project was conducted to identify skills that vocational students will need to adapt to future changes in the workplace and jobs caused by advancing technology as well as to develop policy stands on how those skills can be imparted. Research was conducted through computer searches of relevant data bases, interviews with vocational educators and consultants, cooperation with major industries, and mailed questionnaires to Fortune 500 companies. The material generated through this research was analyzed, resulting in the following accomplishments: (1) identification of skills for adapting to change from theoretical, empirical, and applied evidence at the national, state, and regional levels that can be used by Illinois career and vocational educators for curricular and instructional considerations; (2) provision of a policy proposal for development, implementation, revision/renewal, and evaluation of vocational education programs that would emphasize change skills; (3) provision of a policy proposal describing the role that the family, the community, and other social institutions can play in change skill instruction; (4) description of the impact a program of change skill instruction will have on people directly or indirectly influenced by such a program; (5) production of technical and final research reports; and (6) production of a questionnaire and report that assesses and describes perceptions of industry regarding entry-level skills of workers. The project provided a data base that can be used to develop, implement, evaluate, and revise or review vocational education programs that are designed to promote instruction in self-initiation, self-direction, and other change skills. (Copies of each of the policy papers, the literature review, and the questionnaire are included in the report.) (KC)

ED237687

Skills for Adapting to Change; Their Potential Impact, and Suggested Policies for Implementing Them

Project Staff

Principal Investigators:
M. Harry Daniels
Joseph S. Karmos

Funded Agency:
Southern Illinois University
Carbondale, Illinois

Illinois
State Board of
Education

Edward Copeland
Chairman

Donald G. Gill
State Superintendent
of Education

Department of
Adult, Vocational
and Technical
Education

Research and
Development
Section

July, 1983

CE 037637

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Final Report Abstract Format

Official Project Title: Skills for Adapting to Change: Their Potential Impact, and Suggested Policies for Implementing Them

Department of Adult, Vocational and Technical Education Funding Agreement Number: R-31-13-D-0368-460

Project Director(s): M. Harry Daniels and Joseph S. Karmos, Associate Professors of Education, Department of Guidance and Educational Psychology

Funded Agency: Southern Illinois University, Carbondale, Illinois

Location of Funded Agency: Department of Guidance and Educational Psychology, College of Education, Wham Education Building, Carbondale, Illinois 62901

Time Period Covered: July 1, 1982 - June 30, 1983

Major Accomplishments of the Project:

1. Identified skills for adapting to change from theoretical, emperical, and applied evidence at the national, state, and regional levels that can be used by Illinois career and vocational educators for curricular and instructional considerations.
2. Provided a policy proposal for development, implementation, revision/renewal, and evaluation of vocational education programs that would emphasize change skills.
3. Provided a policy proposal describing the role that the family, the community and other social institutions can play in change skill instruction.
4. Described the impact a program of change skills instruction will have on people directly influenced by such a program.
5. Produced technical and final research report
6. Produced a questionnaire and report which assessed and described perceptions of industry regarding entry level skills of workers.

Potential Impact on Vocational Education:

This project provided a data base that can be used to develop, implement, evaluate, and revise or review vocational education programs that are designed to promote instruction in self-initiation, self-direction, and other change skills that may be identified. Further, it is proposed the impact on vocational education will be four-fold. First, the knowledge base will enable researchers and administrators to develop and implement curricula dealing with change skill instruction. Second, teachers of vocational education will be influenced to modify existing practices. Third, vocational education students at all levels will be taught skills that they may employ at any time during the remainder of their lives. Finally, to elucidate the roles that parents and significant others may play in the career decision making process.

Products Delivered: (indicate titles, types, quantity, recipients and date of delivery)

1. Three (3) Quarterly Progress Reports mailed to DAVTE by October 1, 1982; January 1, 1983; and April 1, 1983.
2. Ten (10) copies of the final report, "Skills for Adapting to Change; Their Potential Impact, and Suggested Policies for Implementing Them."
3. Twenty (20) copies of a policy proposal for development, implementation, revision/renewal, and evaluation of vocational education programs that would emphasize change skills as well as impact statements regarding these policies.
4. Twenty (20) copies of a policy proposal describing the role that the family, community and other institutions can play in change skill instruction.
5. Twelve (12) copies of a report, "Preparing Students to Adapt With the New Technology."
6. Twenty (20) copies of the report which assessed and described perceptions of industry of skills needs for entry level employment.

Expenditure of Funds:

There were no discrepencies between the Illinois State Board of Education/Department of Adult, Vocational and Technical Education Funding Agreement amount and actual expenditures claimed.

Paid Participants in the Activity:

Dr. Harry Daniels, Associate Professor of Education at SIU-C worked in the public schools for seven years, both as a junior high school teacher and as a high school ccunselor. In the later position he was primarily responsible for developing and implementing a systematic career guidance program for students in grades 10-12.

During the last four years he has taught in the Department of Guidance and Educational Psychology and the Department of Vocational Education Studies. His primary teaching responsibilities are in the area of career planning, career planning practicums, and occupational education. He also served as the coordinator of the Career Counseling Center at SIU-C during the 1979-1980 academic year, and continues to serve as a member of the training staff of that facility.

Dr. Daniels was co-director of a DAVTE grant to revise the Illinois Career Guidance Handbook. In addition, he has published, Facilitating Students Career Development, and numerous articles dealing with career decision making, career education, and program evaluation. He is also actively engaged in a research project designed to analyze the relationship of career decisions to cognitive and psycho-social development among adolescents and young adults.

Dr. Joe Karmos, Associate Professor at SIU-C, taught in the public schools for 14 years, both at the elementary and secondary levels. For the past eight years he has taught in the Department of Vocational Education and in the Department of Guidance and Educational Psychology. His primary teaching is with adults in an occupational education program. He also supervises Master's level interns teaching in public schools and other instructional settings.

For six years, he was Associate Director of the Comprehensive School Mathematics Program, a curriculum development project for the Office of Education and the National Institute of Education. For another two years he worked as evaluator for that math program. In 1980, he co-directed a 12-month teacher training program for elementary school teachers which was sponsored by the National Science Foundation.

Dr. Karmos has extensively published in the areas of self-esteem, locus of control, responsibility, egocentrism, and communication skills. He also has just recently published the book Help for Job Hunters.

Dr. Ann Karmos taught in the public schools at the elementary and secondary levels for 13 years. For part of this time, she was a teacher-writer for the Comprehensive School Mathematics Program, a federally-funded curriculum development project. Major responsibilities were developing classroom materials and working with teachers in public school classrooms for implementation and management of the curriculum materials.

Dr. Karmos is presently an Associate Professor in the Department of Curriculum, Instruction and Media at Southern Illinois University at Carbondale. She coordinates one of SIU's student teaching centers. Almost all of her time is spent in the K-12 classrooms in DuQuoin, Illinois, in the supervision of student teachers and pre-student-teachers.

She also teaches a graduate level course for classroom teachers in which teachers develop and organize materials to augment their classroom curricula. In 1980, she co-directed a year-long curriculum development program for 30 teachers which was funded by the National Science Foundation.

Dr. Karmos has published numerous articles in the areas of self-esteem, supervision of student teachers, assessing classroom teachers' needs for inservice training, and classroom applications of educational psychology. She has conducted inservice workshops in area school districts and has made yearly presentations at national meetings for the Association of Teacher Educators.

Dr. Jerry Stonewater is presently Assistant Professor in the Instructional Development, Research and Evaluation unit of Learning Resources Service at Southern Illinois University at Carbondale. He consults with faculty about ways to design instruction based on research on learning and teaching, especially in translating cognitive development theory into instruction consistent with learner capabilities.

Prior to coming to SIU-C in 1977, Dr. Stonewater was at Michigan State University as Associate Director of the Engineering Student Development Project, a curriculum development grant funded by the Alfred P. Sloan Foundation. He coordinated the development of twelve self-paced courses in various areas of engineering.

Dr. Stonewater also teaches a graduate course on theories of cognitive and psycho-social development and their application to teaching. He has made presentations and published articles comparing different types of career development courses and their impact on career decision making, on problem solving and its relationship to cognitive development, and on simulation as an instructional strategy. His most recent research is a two-year project looking at numerous variables that affect career development.

Connye M. Barrow, Graduate Assistant, Department of Vocational Education Studies, Southern Illinois University at Carbondale, completed her master's degree in educational psychology (guidance and counseling) at the University of Texas-Austin in 1969. She has served as an employment counselor with the New York State Employment Service and coordinated community college job placement services at Triton College in Illinois. Since 1974, Ms. Barrow has helped to administer research, development, and inservice projects dealing with career development and placements. She has made over 100 inservice presentations dealing with career assistance and placement to local, state, and national groups, including consultation for the State Department of Education in Illinois, Texas, North Carolina, and Pennsylvania.

Ms. Barrow serves as Executive Director of the Pre-Employment & Placement (PREP) Association and has coordinated four statewide PREP Conferences reaching over 1,900 school, agency, and industry representatives. She is currently President-Elect of the Illinois Guidance and Vocational Services Association, a member of the Illinois Vocational Association and Executive Board, and a member of the Policy Committee of the American Vocational association Guidance Division. Additional professional affiliations include National Employment Counselor's Association for Industry-Education Cooperation.

Denis Arthur Junge, Graduate Assistant in the Department of Guidance and Educational Psychology at SIU-C has worked as a researcher for the DAVTE Grant.

During the last four years he has been a Career Group Facilitator for the Department of Guidance and Educational Psychology as well as functioning as a

Divorce Adjustment Group Counselor, an Adult, Individual and Family Counselor and consultant in the area of statistics. Mr. Junge's teaching experience has been in the area of Human Growth, Development and Learning; Psychobiology; and Introduction to Psychology. Mr. Junge also has conducted workshops and given presentations dealing with career development.

Patricia Ann Weyhrich, Graduate Assistant, Department of Guidance and Educational Psychology has had varied experience both in the area of teaching as well as research. During the past two years she has served as a graduate assistant both in the Department of Special Education tutoring learning disabled college students, designing book covers, teaching art and in the Department of Guidance and Educational Psychology as a research assistant for the DAVTE Grant reviewing literature, writing and developing summaries.

Rebecca Danner Yeager, Graduate Assistant, Department of Guidance and Educational Psychology, has for the past nine years had varied experiences in the mental health field. She has served as an educational assistant for the Department of Mental Health, Hannibal, Missouri, served as a clinical caseworker, coordinator of Day Treatment Program, coordinator of Community Projects, Director of Randolph County Sheltered Workshop, Counselor/Health Educator for McCambridge House Women's Center, Office Manager/Counselor for Francis J. Vincent, M.D. and Coordinator of Community Vocational Sustaining Care Program for Elm City Center.

Since 1981 Ms. Yeager, as a doctoral student in the Department of Guidance and Educational Psychology specializing in counselor education, has made various presentations and served in many professional and community service positions.

Resource Listing:

a. Material Resources: Resources obtained through this project have been added to the library of the Department of Vocational and Technical Education.

b. Human Resources: Aside from the project staff, many resource persons contributed time, information, support and feedback to the "Skills for Adapting to Change" project. Among them are:

Dr. Susan Raymond
Center for Public Resources
New York, NY

Dr. Carolyn Warner
Supt. of Public Instruction
Arizona

Vern Magnesen
Director of Career Education
Triton Community College

Warren Bacon
Director of Industrial Relations
Inland Steel Corporation

Phil Viso
Assistant Superintendent
Chicago Public Schools

Dr. Daniel Jepsen
University of Iowa
Iowa City, IA

Isaac Wirzup
University of Chicago
Chicago, IL

David Baker
Executive Vice President
Illinois Chamber of Commerce

Kathy Long
General Motors Corporation
Detroit, MI

Professor James Greenan
Dept. Vocational & Technical Education
College of Education
University of Illinois
Urbana-Champaign, IL

Mr. Cookie Batche, Director
Individualized Career Ed Project
Special Asst. to Director of
Special Education
State Department of Voc. Ed.
Sacramento, CA

In addition, the Career Advisory Council, the administrative council of the Department of Adult Vocational and Technical Education, the directors of the 12 Regional Guidance Centers, the coordinators for the Area Vocational Centers, the public schools, and the Fortune 500 companies each in their own way contributed time, feedback, suggestions and recommendations regarding

project activities. The input by participating schools and Fortune 500 companies with regard to data collection on questionnaires was invaluable to the needs of specific project activities.

All in all, the collective input of the above mentioned persons was certainly significant to the success of the project.

Major Accomplishments and Significant Findings of the Project:

The major accomplished goals and objectives were:

1. Identified skills for adapting to change from theoretical, empirical and applied evidence at the national, state and regional levels that can be used by Illinois career and vocational educators for curricular and instructional considerations.

2. Provided a policy proposal for the development, implementation, revision or renewal and evaluation of vocational education programs that would emphasize change skills so that decision-makers at the state, regional and local levels may consider the feasibility of implementing change skills into the curriculum.

3. Provided a policy proposal describing the role that the family, the community and other social institutions can play in change skill instruction so that vocational and career educators may utilize these resources appropriately.

4. Described the possible impact a program of change skills instructions would have on people directly or indirectly influenced by such a program so that decision makers at the state, regional and local levels can estimate program advantages and just advantages.

5. Produced a technical research report and final report.

6. Produced and tabulated a questionnaire and report which assessed industries perceptions of needed employee entry level skills and perceived entry level competency of those skills.

The Major Activities and Events:

The major activities and events which led toward the attainment of the project goals and objectives include:

Objective 1: Identification of skills for adapting to change from theoretical, empirical and applied evidence at the national, state, and regional levels.

1.1 A computer search of the ERIC files and the Psychological Abstracts was conducted by the project directors.

1.2 A letter requesting names of people who have developed or are utilizing programs pertaining to our project was mailed to directors of the 12 Regional Guidance Centers, coordinators of Area Vocational Centers, and Community Colleges in Illinois.

1.3 A follow-up letter was mailed to all previously mentioned personnel as well as to area consultants at the Department of Adult Vocational and Technical Education. This letter requested respondents to identify experts who could be used by project staff to review various reviews and summaries.

1.4 Each graduate student was assigned primary responsibility to review literature relevant to the project. The three generic themes identified were: Vocational Planning/Decision Making, Human Competency/Learned Helplessness, and Socio-Technical Revolution. Summaries and annotations may be found in the product section of this report.

1.5 Dr. Karmos solicited cooperation of Ford Motor Company and General Motors Corporation.

1.6 Contacted the Director of Career Planning and Placement Center at SIU-C in order to ascertain their companies efforts to aid employees adaptation to change.

1.7 Reviewed the DAVTE Program Evaluation Summaries for FY 82.

1.8 Interviewed Vern Magnesen, Director of Career Education, Triton Community College; Warren Bacon, Director of Industrial Relations, Inland Steel Corporation; and Phil Viso, Assistant Superintendent, Chicago Public Schools.

1.9 Visited General Motors in Detroit for the purpose of identifying their management of quality circle's program.

1.10 Mailed and tabulated results of a questionnaire to representative schools with programs or efforts oriented toward change skills instruction.

1.11 Mailed a questionnaire to all Fortune 500 companies with corporate offices in Illinois designed to assess industry's perception of high school graduates performance capabilities in basic skills areas.

1.12 Established a liaison between Professor James Greenan and ourselves for the purpose of networking information between respective grants.

1.13 Completed and disseminated a paper entited "Preparing Students to Adapt with the New Technologies."

Objective 2: Provide a policy proposal for the development, implementation, revision or renewal, and evaluation of vocational education programs.

2.1 Sent a letter requesting names of people who have developed and/or utilized programs relative to the grant. Also solicitied names of known experts in the field of Adult Vocational and Technical Education.

2.2 A letter was sent to the director of the Individual Career Education project requesting identification of goals, objectives and outcomes of programs relative to our grant.

2.3 A presentation was made to the TENCO/SMSEA Career Education Guidance Conference in order to inform participants of our project and solicit impact. A description of the program will appear in the IVA newsletter.

2.4 Attended the SACVE meeting for the purpose of hearing Professor Issac Wirzup's speech about deficits in mathematics and science education in the United States.

2.5 Initiated and completed a policy proposal relative to Objective 2.

2.6 Made a presentation to the administrative council of the Department of Adult Vocational and Technical Education for the purpose of informing the council about results of the project and to solicit reactions to completed work.

2.7 Summarized and compiled results of the General Skills Questionnaire sent to Fortune 500 companies.

Objective 3: Provide a policy proposal describing the role that family, community, and other social institutions can play in change skills instruction.

3.1 Conducted a computer search of ERIC files and Psychological Abstracts.

3.2 Solicited names of people operating programs which may be relevant to our project and possibly contain elements pursuant to Objective 3. These names and programs were obtained from the Department of Adult Vocational and Technical Education, Community Colleges in Illinois, and the Individualized Career Education Project.

3.3 Produced and wrote a document entitled "Parents and Peers: Their Importance in the Career Decision Making Process."

3.4 Collected data which was pertinent to the areas of concern for Objective 3.

3.5 Interviewed people involved with existing programs that utilized family, community and other institutions to assist in change skills instruction.

3.6 Met bi-weekly with entire project staff for up-date of information.

3.7 Initiated and completed documents dealing with Objective 3.

3.8 Tabulated results of the survey of State of Illinois schools who were identified as working with projects related to teaching and instruction and change skills.

Objective 4: Describe the possible impact of a program of change skills instruction on people influenced by such a program.

4.1 Reviewed the DAVTE Program Evaluation Summaries for FY 82 in Springfield.

4.2 Visited General Motors in Detroit to identify management's success with quality circle program.

4.3 Completed a list of policy proposals based upon information gathered from interviews, questionnaires, meetings, and research data.

4.4 Completed and compiled results of the survey of Fortune 500 companies.

4.5 Interpreted results of school survey.

4.6 Prepared and completed a renewal grant.

4.7 Drafted summary impact statement based upon collected data.

Objective 5: Produce technical research report and final report.

5.1 Wrote draft technical and draft final report.

5.2 Met with staff to disseminate information, ideas, and materials relative to writing and editing drafts of project report.

5.3 Sent the draft reports to DAVTE personnel for review and critique.

5.4 Based upon input from DAVTE personnel, produced a final technical and research report.

5.5 Disseminated the final technical and research report.

5.6 Produced the 1983-84 DAVTE project proposal.

Illinois State Board of Education

Department of Adult, Vocational and Technical Education
Research and Development Section

Product Abstract

1. Title of material: Skills for Adapting to Change: Their Potential Impact, and Suggested Policies for Implementing Them

2. Date material was completed: June, 1983

3. Please check one: New material [x] Revised material [ ] Field-tested material [ ]

4. Originating agency: Southern Illinois University

   Address: Dept. Guid. & Ed. Psych., Carbondale, Il. Zip Code: 62901

5. Name(s) of developer(s): M. Harry Daniels, Joseph S. Karmos, Denis Junge, Ann Karmos, Patricia Weyhrich, Connye Barrow, Rebecca Yeager, Jerry Stonewater

   Address: Same as Above Zip Code:

6. Developed pursuant to Contract Number: R31-13-D-0368-460

7. Subject Matter (Check only one according to Department of Education Code)

   Code

   - [ ] 01 Agricultural Education
   - [ ] 03 Business and Office Education
   - [ ] 04 Distributive Education
   - [ ] 07 Health Occupations Education
   - [ ] 09 Home Economics Education
   - [ ] 10 Industrial Arts Education
   - [ ] 16 Technical Education
   - [ ] 17 Trade and Industrial Education
   - [ ] 22 Cooperative Education
   - [ ] Career Education
   - [x] Other (Specify) New Basics

8. Education Level:

   - [ ] Pre-K Thru 6
   - [x] 7-8
   - [x] 9-10
   - [x] 11-12
   - [x] Post-Secondary
   - [x] Adult
   - [ ] Teacher (Pre-service)
   - [ ] Administrator (Pre-Service)
   - [ ] Other (Specify)

9. Intended for Use By:

   - [ ] Student
   - [ ] Classroom Teacher
   - [x] Local Administrator
   - [x] Teacher Educator
   - [x] Guidance Staff
   - [x] State Personnel
   - [ ] Other (Specify)

10. Student Type:

    - [x] Regular
    - [x] Disadvantaged
    - [x] Handicapped
    - [ ] Limited-English Proficiency
    - [x] Other (Specify) Adult

11. Medium and Format of Materials:

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Diagrams: Yes [ ] No [ ]			

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Springfield, Il. Zip Code 62777

14 What level(s) of assistance is required to provide implementation of this outcome?

_x_ awareness _x_ understanding
_x_ deciding _x_ implementing

15 Are Consultive/Inservice (or staff development) available? Yes _x_ No _____

Contact Illinois State Board of Education
Department of Adult, Vocational and Technical Education
Research and Development Section, E-426
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Springfield, IL 62777
(217) 782-4620

16 General Description (State the general objective and suggested method of use. Summarize the content and tell how it is organized. Write the description so that it can be used to promote the material. Continue on back of this sheet or on another sheet, if necessary.)

See Other Side

17 Person Completing this Abstract M. Harry Daniels

Full Address Dept. Guid. & Ed. Psych.
Southern Illinois University
Carbondale, Il. 62901

Zip _____

III/5.2

16. This report is designed to acquaint teachers, counselors, administrators, and other school personnel with the skills necessary for change within the new technology. This report highlights the roles that families, peers, and other social institutions may play in assisting the development of related change skills. It also provides policy proposals for development and implementation of vocational education programs that would emphasize the necessary change skills.

Illinois State Board of Education

Department of Adult, Vocational and Technical Education
Research and Development Section

Product Abstract

1. Title of material: Perceptions of Business and Industry: Basic Skills Necessary for Successful Employment Compared to Competencies of Entry Level Employees
2. Date material was completed: June, 1983
3. Please check one: New material [x] Revised material [ ] Field-tested material [ ]
4. Originating agency: Southern Illinois University
   Address: Department Guid.& Ed. Psych., Carbondale, Il. Zip Code: 62901
5. Name(s) of developer(s): Denis Junge, M. Harry Daniels, Joseph Karmos
   Address: Same as Above Zip Code:
6. Developed pursuant to Contract Number: R31-13-D-0368-460
7. Subject Matter (Check only one according to Department of Education Code):

   Code

   - [ ] 01 Agricultural Education
   - [ ] 03 Business and Office Education
   - [ ] 04 Distributive Education
   - [ ] 07 Health Occupations Education
   - [ ] 09 Home Economics Education
   - [ ] 10 Industrial Arts Education
   - [ ] 16 Technical Education
   - [ ] 17 Trade and Industrial Education
   - [ ] 22 Cooperative Education
   - [ ] Career Education
   - [x] Other (Specify) New Basics

8. Education Level:

   - [ ] Pre-K Thru 6
   - [x] 7-8
   - [x] 9-10
   - [x] 11-12
   - [x] Post-Secondary
   - [x] Adult
   - [ ] Teacher (Pre-service)
   - [ ] Administrator (Pre-Service)
   - [ ] Other (Specify)

9. Intended for Use By:

   - [ ] Student
   - [ ] Classroom Teacher
   - [x] Local Administrator
   - [x] Teacher Educator
   - [x] Guidance Staff
   - [x] State Personnel
   - [ ] Other (Specify)

10. Student Type:

    - [x] Regular
    - [x] Disadvantaged
    - [x] Handicapped
    - [ ] Limited-English Proficiency
    - [x] Other (Specify) Adult

11. Medium and Format of Materials:

[x] HARDCOPY	[ ] VIDEOTAPE	[ ] FILM	[ ] MICROFICHE
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14 What level(s) of assistance is required to provide implementation of this outcome?

__x__ awareness
__x__ deciding
__x__ understanding
__x__ implementing

15 Are Consultive/Inservice (or staff development) available? Yes __x__ No_____

Contact Illinois State Board of Education
Department of Adult, Vocational and Technical Education
Research and Development Section, E-426
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16 General Description (State the general objective and suggested method of use. Summarize the content and tell how it is organized. Write the description so that it can be used to promote the material. Continue on back of this sheet or on another sheet, if necessary.)

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17 Person Completing this Abstract M. Harry Daniels

Full Address Southern Illinois University
Dept. Guidance & Ed. Psych
Carbondale, Il. 62901

Zip_____

III,5 2

16. This product utilized the Basic Skills Questionnaire to assess business and industry's perceptions of the basic skills needed for entry level successful employment. It also assesed business and industry's perceptions of the compentencies that entry level employees have. An analysis of the results is given in this report as well as conclusions and implications for educators and employers.

Illinois State Board of Education

Department of Adult, Vocational and Technical Education
Research and Development Section

Product Abstract

1. Title of material Parents and Peers: Their Importance in the Career Decision Making Process
2. Date material was completed June, 1983
3. Please check one: New material x Revised material ____ Field-tested material ____
4. Originating agency Southern Illinois University
   Address Dept. Guid.& Ed. Psych. Carbondale, Il. Zip Code 62901
5. Name(s) of developer(s) M. Harry Daniels, Joseph S. Karmos, Cheryl A. Presley
   Address Southern Illinois University Carbondale, Il. Zip Code 62901
6. Developed pursuant to Contract Number R31-13-D-0368-460

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   ____ Career Education
   x Other (Specify) New Basics

8. Education Level

   ____ Pre-K Thru 6
   x Post-Secondary
   ____ Administrator (Pre-Service)
   x 7-8
   x Adult
   x 9-10
   ____ Teacher (Pre-service)
   x 11-12
   ____ Other (Specify) ____

9. Intended for Use By:

   ____ Student
   ____ Teacher Educator
   x Other (Specify) Regional Guidance
   ____ Classroom Teacher
   x Guidance Staff
   x Local Administrator
   ____ State Personnel

10. Student Type

    x Regular
    ____ Limited-English Proficiency
    x Disadvantaged
    x Handicapped
    ____ Other (Specify) ____

11. Medium and Format of Materials

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Address Springfield, Il. Zip Code 62777

14 What level(s) of assistance is required to provide implementation of this outcome?

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__X__ deciding
__X__ understanding
__X__ implementing

15 Are Consultive/Inservice (or staff development) available? Yes __x__ No _____

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17 Person Completing this Abstract M. Harry Daniels

Full Address

Southern Illinois University

Department of Guidance & Educational Psychology

Carbondale, Il. 62901 Zip _____

III.5.2

16. The purpose of this report is to provide a rationale for utilizing parents and peers to enhance the career decision making process of adolescents. It provides an overview of the nature of the parental/peer influence, identifies the types of efforts that may be utilized by parents/peers, identifies guidelines which may be utilized by parents, and finally, lists recommendations for guidance pesonnel who wish to work with parents on this critical issue.

Illinois State Board of Education

Department of Adult, Vocational and Technical Education
Research and Development Section

Product Abstract

1. Title of material Preparing Students to Adapt With the New Technology

2. Date material was completed October, 1982

3. Please check one: New material __x__ Revised material _____ Field-tested material _____

4. Originating agency Southern Illinois University

   Address Dept. Guid. & Ed. Psych., Carbondale, Il. Zip Code 62901

5. Name(s) of developer(s) M. Harry Daniels, Joseph S. Karmos, Denis Junge, Patricia Weyhrich, Rebecca Yeager

   Address Same as above Zip Code _____

6. Developed pursuant to Contract Number R31-13-D-0368-460

7. Subject Matter (Check only one according to Department of Education Code)

   Code

   _____ 01 Agricultural Education
   _____ 03 Business and Office Education
   _____ 04 Distributive Education
   _____ 07 Health Occupations Education
   _____ 09 Home Economics Education
   _____ 10 Industrial Arts Education
   _____ 16 Technical Education
   _____ 17 Trade and Industrial Education
   _____ 22 Cooperative Education
   _____ Career Education
   __x__ Other (Specify) New Basics

8. Education Level:

   _____ Pre-K Thru 6 __x__ 7-8 __x__ 9-10 __x__ 11-12
   __x__ Post-Secondary __x__ Adult _____ Teacher (Pre-service)
   _____ Administrator (Pre-Service) _____ Other (Specify) _____

9. Intended for Use By:

   _____ Student _____ Classroom Teacher __x__ Local Administrator
   _____ Teacher Educator __x__ Guidance Staff __x__ State Personnel
   __x__ Other (Specify) Regional Guidance

10. Student Type:

    __x__ Regular __x__ Disadvantaged __x__ Handicapped
    _____ Limited-English Proficiency __x__ Other (Specify) Adult

11. Medium and Format of Materials:

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17 Person Completing this Abstract M. Harry Daniels

Full Address Southern Illinois University
Dept. Guid. & Ed. Psych.
Carbondale, Il. 62901

Zip_____

III.5.2

16. This paper represents a review of literature addressing the problems associated with preparing students for adapting to change with the new technology. Included also, is an organizational model that can be used for deliberations about this issue. Three alternative which represent a continuum of ways that students can maximize their potential for adapting with the new technology are described as well as suggested strengths of each alternative.

Illinois State Board of Education

Department of Adult, Vocational and Technical Education
Research and Development Section

Product Abstract

1. Title of material Policy Proposals for Preparing Students to Adapt With the New Technology
2. Date material was completed June, 1983
3. Please check one: New material x Revised material ____ Field-tested material ____
4. Originating agency Southern Illinois University

   Address Dept. Guid. & Ed. Psych., Carbondale, Il. Zip Code 62901
5. Name(s) of developer(s) M. Harry Daniels, Joseph S. Karmos, Ann Karmos

   Address Same as Above Zip Code ____
6. Developed pursuant to Contract Number R31-13-D-0368-460

7. Subject Matter (Check only one according to Department of Education Code):

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    x Handicapped
    x Other (Specify) Adult

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See Other Side

17 Person Completing this Abstract M. Harry Daniels

Full Address

Department of Guidance & Educational Psychology

Southern Illinois University

Carbondale, Il. Zip 62901

III/5 2

16. This document is a policy proposal for development, implementation, revision/ renewal, and evaluation of vocational education programs that would emphasize change skills that are needed to adapt with the New Technology. Included are impact statements relative to each policy proposal as well as an overall statement of impact.

Major Dissemination Activity Summary:

Initially, the dissemination plan centered around the dissemination of the products of the project, i.e., the annotations, reviews, policy proposals and impact statements to appropriate audiences. It became evident, however, that it was equally necessary to disseminate information regarding the NEED for the project as well as about procedures used to achieve project goals. In light of this position, dissemination activities were chosen which would maximize both objectives.

a) A presentation aimed at informing the administrative council of the Department of Adult Vocational and Technical Education about the project results was given. A secondary purpose for this presentation was to solicit the councils reactions to the work which had been completed. The presentation occurred in Springfield, Illinois on May 11. The presenters were Dr. Joseph S. Karmos and Dr. Harry Daniels, Associate Professors, Department of Guidance Educational Psychology, Southern Illinois University.

b) Copies of the report entitiled "Preparing Students to Adapt With the New Technology" were sent to selected individuals throughout the state to have them read, review and respond to contents of the paper. Dr. Harry Daniels, Dr. Joseph S. Karmos, Associate Professors, and Denis Junge, graduate student, in the Department of Guidance and Educational Psychology, Southern Illinois University were the authors.

c) A presentation intended to disseminate information gained as a result of the project was made to the Region 12 Career Advisory Council on May 21 in Mt. Vernon, Illinois. The presenter for the conference was Dr. Harry

Daniels, Associate Professor, Department Guidance and Educational Psychology, Southern Illinois University. As a result of this presentation, several inquiries about the content of the presentation were received from local school administrators and labor officials.

d) Copies of the final report were sent to the ISBE/DAVTE to fulfill requirements for project objectives.

e) A presentation aimed at informing the workshop participants of our project outcomes was given by Dr. Beverly Brown and Dennis Junge of the Department of Guidance and Educational Psychology. The presentation was made to the TENCO/SMSEA Career Education Guidance Conference in Belleville, Illinois, 1982.

Staff Development:

The staff development activities for the project staff consisted of participation in several professional conferences, workshops and meetings. Among the workshops and conferences were:

The Math and Science Education Conference
Speaker: Dr. Wirzup, University of Chicago

Career Advisory Council Meeting
Mt. Vernon, Illinois

SACVE Meeting
Champaign, Illinois

TENCO/SMSEA Career Education
Guidance Conference
Belleville, Illinois

Meetings with various professionals in designated fields were attended by some or all of the project staff:

DAVTE Project Directors Conference
Sangamon State University
Springfield, Illinois

Warren Bacon
Director Industrial Relations
Inland Steele Corp.

David Baker
Executive Vice Pres.
Illinois Chamber of Commerce

Susan Raymond
Center for Policy Research
New York City, New York

Jim Greenan, Project Director
Champaign, Illinois

Vern Magnesen, Dir. of Career Ed.
Triton Community College

Phil Viso
Asst. Supt. of Schools

Dr. Cookie Batche, Director
Individualized Career Ed. Project

In addition, bi-weekly meetings were held and attended by the project staff in order to share problems, concerns, and progress.

Publicity:

A news release about the project appeared in the Southern Illinoisan. A copy of the release is included. As a result of the news release SIU-C Radio News Service requested a telephone interview which was used locally and then disseminated throughout the state. Taping of a short video elucidating the nature of the project is underway.

The "Skills for Adapting to Change" project received other direct publicity through class presentations, presentations at professional conferences and presentations at meetings.

SIU

NEWS FROM SIUC

University News Service
Pete Brown, Coordinator 618/453-2276
Southern Illinois University at Carbondale
Carbondale, Illinois 62901

12 - 21 - 82

CARBONDALE, Ill. --What do you do if you're 55 years old and you've just been laid off the job you've worked at for the last 30 years because a robot can do it cheaper?

Chances are you don't have any idea.

Most 55-year-olds don't know what to do when they're knocked off the assembly line by advancing technology, and neither do very many 35-year-olds or 25-year-olds, says Harry Daniels.

For some people, it's a disaster.

"It's important that the human dimension of this social-technical revolution is recognized," said Daniels, an associate professor in Southern Illinois Unversity-Carbondale's Department of Guidance and Educational Psychology.

Item: Two years ago, a factory in Florence, Ky., employed more than 140 workers. Six people work there today. The rest of the work is done by computer-controlled robots.

"That kind of change has tremendous impact on people's lives," Daniels said. "It's becoming a very real problem, with some very large implications for the educational system."

Daniels says few public schools do very much to prepare young people to deal with the changes they'll face during their working lives, and not knowing how is going to hurt them. People will have to know how to adapt, simply to survive, he says.

"Statistics show that people 25 years old today will change jobs seven times during their working years," he said. "The jobs kids in high school today will be working at aren't even defined yet.

(MORE) 3-1

"Who would have ever thought of a job like 'robotics technician?'

"It's here, and people are working at it."

Working under a contract with the Illinois Division of Adult Vocational and Technical Education (DAVTE), Daniels, associate professor Joseph Karmos and research assistant Denis Moore, a Ph.D. student in the Department of Guidance and Educational Psychology, are collecting and analyzing information from research journals and public school systems around the country to see what other experts in the field see as ways people can deal with changes in the way they fit into the workaday world.

They hope to put together what they find into policy proposals state education planners can use to guide public schools in setting up vocational-education curriculums that will better prepare future job-holders to cope with the changes they'll face during their working lives.

The project is being conducted under a one-year, $45,000 contract with DAVTE.

"Even if a prospective employee has the specific skills to get and hold a job, it's not going to be enough because the job may become obsolete," he said.

-gc-

Problems:

Initially, computer searches of published materials, relative to Objective one, seemed to miss important resources. As a result, a lot of time was spent going through professional journals manually. Another difficulty encountered during this same period dealt with the difficulty in identification of programs or efforts which were currently in progress that utilized or identified skills for adapting to change. Both of these difficulties delayed progress relative to original time allocations, but were alleviated and necessary data was collected.

The original proposal called for the identification of skills for adapting to change and then the independent review of the skills identified by a panel of experts. We have been unable to identify a panel of experts within the state that is independent of the people we are using as resources. This problem is due, we believe, to the fact that the focus of this grant has been a peripheral concern to the majority of vocational and career educators.

A problem of a different kind, but one that may have a more long-lasting impact, centers around the nature of the skills that are being identified. Many of the skills are not traditionally viewed as skills emphasized by vocational educators. In general terms, the skills that have been identified fall within either the cognitive or the affective domain, and outside of the psychomotor domain, which tends to be the primary focus of vocational education. This disparity between our preliminary findings and the tradition of vocational technical education represents a basis for a specific cognitive dissonance that may impede the adoption of proposals from this project.

The problems associated with identification of skills necessary for adapting to change became most apparent after the presentation of our paper

"Preparing Students to Adapt With the New Technology." The reactions to our paper ranged from dismissal to extreme excitement. These reactions helped us to identify several specific problems. First of all, there is the problem of defining the issue that is addressed by this particular grant, namely the identification of skills that are necessary to help students adapt with the changing technology. Central to this issue is the fact that the work world seems to be going through a paradigm shift. A paradigm is a means for understanding and explaining certain aspects of reality, e.g., the relationship between education and the work world. A paradigm shift is a distinctly new way of thinking about old problems. In this case, the problem is how to prepare students for participation in the work world. The paradigm shift is necessary because we are repeatedly finding that students are ill prepared to work in the post industrial market place.

The inability of students to work effectively in the post industrial market place is making the need for rethinking the preparation of students for employment, an important fact of our time. But it means that we have to rethink old schemes of educating students for employment and to identify new ways to achieve this essential and traditional goal. A problem that confronts education then is the lack of a clear model that accurately portrays the paradigm shift that is taking place.

Our paper entitled "Preparing Students to Adapt With the New Technology" set forth a model that identified primary elements of that paradigm shift. Based on our feedback from our readers, we are redesigning our model and will hopefully present a model that is both more clear and more accurately portrays the paradigm shift.

A related issue is the introduction of the paradigm to the larger public. Marilyn Ferguson, author of The Aquarian Conspiracy, points out that when paradigm shifts are first introduced into the larger societal context they are frequently rejected. They are rejected because they are at odds with traditional practices. We will have to be prepared to have our efforts be rejected by the rank and file vocational educators throughout the state. The predictable rejection of the model raises a serious problem that must be recognized. That problem centers around the question "What is the role of vocational education within the state?" Two polar alternatives can be identified. One alternative is that education is the reflection of the ideas and practices of the community in which it exists. The alternative proposal is that education shapes the ideas and practices of education in the community in which it exists. If this shift in paradigm is to be successfully managed at the state and local level, it is our position that the administrative council must assume the posture of shaping the ideas and practices of vocational education in the state of Illinois.

Statement of Impact:

This project is concerned with change: changes in the work world that are due to the socio-technical revolution, changes in the skills needed to secure and maintain employment, changes in the economic base of our nation, changes that workers can expect in their lifetime, changes in the way students' capacities to work are assessed, and change in the composition of the work force. Due to the focus on change, it is likely that the project will result in changes in vocational education.

Mary Ellis, President of Ellis Associates, outlined the importance of change for Vocational Education in a lecture at the National Center for

Research in Vocational Education. She stated that "Educating our students for change and organizing ourselves for change seems . . . to be appropriate and necessary at this time." "If we do everything we can to help our students develop flexibility, adaptability and mobility, we will be helping them to be sure. But we will also be helping their employers by providing a work force that may be acceptant of changes in jobs and organizations when they do occur, and able to function effectively in the new jobs and organizations . . . By educating for vocational change, we can minimize the costs, both human and financial, that are generally associated with change."

Ellis also suggested that planning for change in vocational education should begin from a perspective outside, as well as inside vocational education. According to her, vocational educators, like most other people who have worked hard to establish viable programs, are reluctant to change. As she stated it, "But what happens when the concept of change is introduced? What happens when the mandate is to be responsive in terms of the changing needs, interests, and abilities of students, and responsible in terms of the changing needs and opportunities in the labor market? What happens, I think, is we continue to do some things that we have always done in vocational education, but we make a concerted effort within our field to do these things much better than we have in the past. We have sought, for example, not only to teach entry level skills but to prepare students for vocational development that extends beyond the entry level job or the entry step on their career ladders. We have understood that this was what set vocational education apart from other types of short-term training programs. At this time, we must ensure that this is more than just rhetoric. At this time, we must take a careful look at the design of our programs, to ensure that they are capable of

preparing our students to look beyond the entry level and to understand how skills and experience at one level and in one occupation may later be applied at another level and in another occupation. We must ensure that our students have a good picture of the cluster of occupations they will be entering, and that they understand why it is important for them to have this picture. We must ensure that our students enter their chosen vocations with an awareness that what looks good today may not necessarily look good tomorrow - or may not even exist tomorrow. We must ensure that our students know that our economy is likely to change, and that they are likely to change."

If Ellis' perceptions are accurate, this project can serve as an impetus to bring about change in vocational education in Illinois. The project meets all of her criteria for bringing about such change: it will present a perspective that is both supportive and critical of vocational education, it will argue that the change skills to be identified are essential elements of the development of a flexible, adaptable and mobile work foce, and it will demonstrate that the proposals are responsive to the prominent social issues of the day.

It is also true that the project will meet with a degree of disapproval, both from those within and outside of vocational education. At a minimum this difference will result in a dialogue about the appropriate direction of vocational education in the future, a dialogue that is a representation of the change process. Thus the project will make change an integral part of vocational education in this state.

Conclusions and Recommendations:

The conclusions of this study are based on the data presented for each of the four objectives and include:

1. Evidence reveals the willingness of business and industry to work wit schools. Presently, however, business and schools have disparate vie of the adequacy of preparation in basic skills. The link between business and industry and education represents a critical feature of impetus for change.

2. Most authorities agree that individuals will change careers several times in their respective lifetime. For schools to fulfill their responsibility to society they must prepare students for a life of work not to be narrowed by only preparing students for their first jobs.

3. Basic skills are important for our entire society and certainly for each individual. It is expected that employability across the lifespan will be directly related to individuals' mastery of the "Five R's": Reading, Writing, Arithmetic, Relationships and Reasoning.

4. Present students are not good problem solvers. The worker of tomorrow will have to be a problem solver as opposed to a component of a production line. Industry reports the need for teaching young people decision making and problem solving skills so they will be ready for further education and training.

5. Traditional methods of student assessment are unsatisfactory for purposes of education designed for employability. This dissonance

is enhanced by the fact that the traditional assessment methods are references to traditional occupations with no sure predictions about the characteristics of occupations that will emerge in the technological revolution.

6. The National Science Foundation targets seven major job areas for application of new technologies. Coupled with the fact that our society is described as an "information society" it is evident that microcomputers represent a fundamental component of that society. At present research gives no indication, however, that the technological advances are being fully realized in our education systems.

7. Adapting with change in the future is the single task that will confront every student. The problems of unemployment, transition, coping and stress have made researchers aware that individuals differ in their ability to adapt to change. It has become evident that the skills associated with self-management are not only needed but necessary to assist people as they move through life and experience change and transition.

8. Evidence suggests that a dichotomy appears to exist between the "know how" of jobs as opposed to the "know why." This dichotomy is apparent in the educational methodology of academic education versus vocational education. Academic education traditionally teaches the theoretical base ("know why") while vocational education emphasizes

the practical ("know how"). Experts predict, however, that knowledge, learning, information and skilled intelligence which combine both the theoretical and practical aspect of a given knowledge will be the skills needed in order for our students to successfully compete in the global market place.

9. Based upon the reports of the Education for Employment Policy Study, the Illinois State Board of Education is in the business of Employability Education. At present, however, Employability Education appears to be limited to the students' initial post high school employment. It is suggested that high school graduates will need to, in fact, exercise Employability Education several times during their lifetime. It is essential, therefore, that education must establish long-term goals and use short-term goals as the means to achieve those goals.

10. Technology and human potential are the two great challenges and adventures facing humankind today. One of the fears that accompanies technological advances is that both the schools and the work world will become dehumanized.

11. The emphasis by the schools self-esteem in the last two decades has been insufficient relative to the issue of a student's competency. It is suggested that emphasis upon competency may, in fact, enhance self-esteem and at the same time make a significant contribution to a committment to excellence in the work place.

12. Career decision making is one of the most important tasks facing adolescents. The decisions an individual makes shapes not only that individuals' career, but that person's identity as well. It is imperative to consider then how best to prepare people in this age group to make decisions regarding their career choice. Parents represent a virtually untapped resource that career guidance personnel can utilize to facilitate adolescents career decision making.

13. Based upon the findings of the BSQ study, there exists a discrepancy between business and industry's perception of basic skills considered important for successful employment and the competencies of entry-level employees.

14. The BSQ's survey of business and industry's perception of basic skills important for successful employment indicate that writing skills are considered an important requirement.

15. The BSQ's survey of business and industry's perception of basic skills important for successful employment suggest that speaking/listening skills are considered the most essential basic skill for successful employment.

Based on the research findings and conclusions of this study, several recommendations can be made for practice and future research. The recommendations include:

1. In order to maximize the potential of the link between business and industry and education, it is recommended that an organization

consisting of members of both groups be established to serve as a liaison between business and education and to serve as a quality control mechanism for changes in instruction. Substantive cooperation needs to occur so that there is a continuing exchange of informational ideas between schools and businesses for students to be adequately prepared for work on a long and short-range basis.

2. Because of the trend toward and need for change with regard to careers, it is essential that vocational education reduce its emphasis on students' initial employment and emphasize skills needed for employability across the life span which will require graduates who can transfer their skills and knowledge to many settings and who can handle transitions in job related changes.

3. Relative to the perceived need for mastery of the "basics" in education, it is suggested that increased emphasis should be given to mastery of these skills by all students. The commonality among lists and proposals for teaching the basic skills (e.g. mathematics, science, reading, writing, reasoning, problem solving, and being able to get along with people to accomplish a task) could form an adequate basis for schools to implement a reorganization of basic skills instruction.

4. Education would aid students in the preparation for the role of problem-solver if it would design curricula for problem solving, decision making, etc. It is proposed that an effort be undertaken to investigate the feasibility of designing a curricula for problem solving that would have cross-disciplinary applicability.

5. It is recommended that the critical issue of assessment would be resolved if the focus of assessment and potential assessment instruments is placed on the identification and measurement of those skills that are necessary for success in any particular occupation and that are transferable across occupations.

6. In order to insure graduates' participation in all facets of the "information society," it is recommended that every student who graduates from a school that receives DAVTE monies will be able to demonstrate their ability to operate a microcomputer.

7. Because change and transition are an inevitable part of life confronting every student, it is recommended that each student be expected to take and complete a self-management course that is future oriented. Evidence exists that these skills are teachable and can help people act realistically and meet changes effectively. Schools can help students by instructing them in self-management skills.

8. Because it is predicted that the worker of tomorrow will have to master both "know how" (practical) and "know why" (theory) of jobs it is recommended that efforts be undertaken to integrate vocational education courses with appropriate academic courses. Furthermore, it is recommended that a unified effort by traditional and vocational educators be made to develop a curricula that will meet this end.

9. Based on the perceived need for implementation of long-term as well as short-term educational goals, it is proposed that the goals of DAVTE be based on the long-term objectives of the Illinois State Board of Education and that those goals reflect the realities of both current and predicted labor markets. Furthermore, we propose that DAVTE require all recipients of fiscal funds to explicate their long-term objectives and show how the short-term goals are related to the potential achievement of long term goals.

10. To counterbalance the tendency to dehumanize school and the work world, it is recommended that increased emphasis be given to aesthetics. In order to accomplish this, it is recommended that discussion of works of art and literature as well as involvement in activities such as music, drama and visual arts become an essential component of the curriculum.

11. It is recommended that schools take an active role in helping students achieve a personal sense of competence and thereby encourage the quest for excellence. It is our proposal a) that each school district be expected to define excellence in vocational education, b) that they operationalize that definition, and c) that they institute measures to achieve their particular definition.

12. It is recommended that career guidance personnel begin utilizing parents as a resource for assisting adolescents in their career decision making process. In order to accomplish this we propose that the career guidance personnel redefine their role within the school and begin working with parents functioning as adult educators.

It is also recommended that career guidance personnel become familiar with existing programs or design new programs which would enhance the career decision making process.

13. Based upon business and industry's need for a higher level of basic skill competency from secondary school graduates, more communication and collaboration between the business community and the educational system is warranted.

14. Based upon data of BSQ survey, it is suggested that emphasis be placed on increasing the level of secondary school graduate's competency in writing skills.

15. Based upon data of BSQ survey, it is suggested that systematic strategies for training active listening and speaking skills be incorporated into the school curriculum.

APPENDICES

PREPARING STUDENTS TO ADAPT WITH THE NEW TECHNOLOGY

ILLINOIS STATE BOARD OF EDUCATION

Adult, Vocational and Technical Education

PREPARING STUDENTS TO ADAPT WITH THE NEW TECHNOLOGY

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PREPARING STUDENTS TO ADAPT
WITH THE NEW TECHNOLOGY

Synopsis

The paper represents a review of the literature addressing the problems associated with preparing students to adapt with the new technology. The paper is presented in two parts that are interrelated but can be read separately. The first part consists of a synthesis of the available literature and the presentation of an organization model that can be used for deliberations about this issue. The review is presented in a relatively informal style in an attempt to improve its readability. The second part of the paper consists of an annotated description of some of the primary sources of information cited in the synthesis.

Summary of Major Points

1. The new technology is forcing vocational education decision makers to establish policies that will influence the direction and focus of vocational education during the next decade. This task is further complicated because of the difficulties associated with the task of forecasting the types of skills that will be required by future workers.

2. There are serious differences of opinion regarding the kind of career preparation our young people will need for the jobs of the future. These differences range from an emphasis on traditional job skills to an emphasis on the new technology. Other emphases include a common set of intellectual skills; basic educational skills such as reading, writing, mathematics, interpersonal communication, and reasoning skills; and transferable skills.

3. Three alternatives for adapting with the new technology are described. These alternatives differ with regard to the meaning of adaptability, the types of skills that promote adaptability, and the appropriate format for teaching the skills.

4. The three alternatives represent a continuum of ways that students can maximize their potential for adapting with the new technology. Alternative One emphasizes the importance of basic skills alone. Alternative Two stresses the importance of basic skills and transferable skills. Alternative Three emphasizes the importance of basic skills, transferable skills, and change skills. Alternative Three provides the greatest opportunity for students to adapt with the new technology.

5. The current state of each of the three alternatives is bleak. Business and industry express dissatisfaction with entry-level employees' competencies in both the basic and transferable skills. If this condition is not remedied, both business and industry and vocational education will be harmed.

6. Despite the present problems, vocational education has the potential to meet students' needs to adapt with the new technology and achieve a full and satisfying life.

Prescriptions for the future of vocational education in Illinois are being drawn. These prescriptions will shape both the direction and focus of vocational education during the next decade. Prescribing the future is always a tenuous activity, but the task of prescribing the future of vocational education is even more difficult because almost every segment of the work world is experiencing a period of rapid technological change. This explosion of technology hampers the development of long-term prescriptions, and it places limits on the accuracy of forecasts about the types of skills that will be required for future workers.

Paradoxically, it is the reality of the technological revolution that provides the impetus for developing a new programmatic policy for vocational education. It is because of rapidly changing technology that vocational education decision makers need to develop policies that will <u>insure</u> with great likelihood that students will be able to effectively function in a future work environment that is as yet undefined. The question that has to be addressed is: How do we prepare students to work in an environment that is continually changing?

William Glasser has written that such dilemmas represent opportunities for individuals to use their creative intelligence. Intelligence, he suggests, "is knowing what to do when you don't know what to do." This definition implies that intelligent action requires three conclusions from decision makers. First, a recognition that a solution to the problem is not already available. Second, traditional practices or habits will most likely not be helpful. Third, a solution will be found in the adoption of new assumptions and behaviors.

If vocational education is to fulfill its responsibility to prepare students to work in the future, it must make wise decisions today. Today, decisions are needed on how to prepare students to adapt to the new technology. This problem cannot be resolved with traditional methods and practices. Its resolution will come through the reorganization of current knowledge about human behavior and through an education that emphasizes skills for managing change and transitions.

While these propositions may appear to be critical of vocational education, they nevertheless reflect a point of view that is growing in popularity among business and industry. As Stephen G. Weber of the XEROX Corporation has put it, "Our educational planners must learn that our traditional education and liberal arts programs are not providing the kind of career preparation our young people need for the jobs of the future."

Career Preparation: What Kind is Necessary?

What kind of career preparation do our young people need for jobs of the future? Different people suggest different answers, each reflecting a different point of view. Stephen Weber, for example, proposes a two-prong answer. For him, preparation would include courses that emphasize group dynamics, consensus decision making and problem-solving skills on the one hand, and the new expanding technologies on the other. A similar, yet independent, alternative is provided by David Baker, Executive Vice President of the Illinois State Chamber of Commerce. He suggests that students need to be prepared for the "microelectronics revolution" that will be accompanied

by "attitudinal and psychological problems" caused by the generic job changes that will confront future workers.

Mortimer Adler and the members of the Paideia Group have presented alternatives that are in strong contrast to those just mentioned. Adler emphasizes the importance of providing all students with the same course of study. Such a curriculum would insure "the acquisition of organized knowledge, the development of intellectual skills, and the enlargement of understanding insight and aesthetic appreciation." The Paidea Group makes no provisions for traditional vocational education.

While the Paideia Group represents an extreme set of alternatives, they are not without their supporters. James Krohe, Jr., a columnist for the Illinois Times, argues that students do not need to be trained in the latest technologies because the technologies will change before the training is completed, making the training obsolete. Kaohe argues instead for an emphasis on more basic intellectual skills, such as reading and scientific reasoning, for high adaptability in work. Professor Isaac Wirzup of the University of Chicago makes a similar argument, albeit a more focused one. It is his contention that increased emphasis in the study of mathematics and science provides the surest way to enable future workers to adapt to the changes that will accompany technological changes.

Another response to the question of what kind of career preparation is necessary for the future worker is found in the identification of transferable skills; that is, skills that are useful across many situations. Lists of transferable skills have been compiled. A classification scheme with five categories has been proposed by Kawula and Smith,

who directed the Generic Skills Project. The skills included were: mathematics skills, communication skills, interpersonal skills, reasoning skills, and manipulative skills.

Lynn Grover Gisi and Roy Forbes of the Education Commission of the States have also compiled a list of transferable skills. Their list includes the following skills: evaluation and analysis, critical thinking, problem solving, organization and reference, synthesis, application to new areas, creativity, decision making with incomplete information, and communication skills in many modes.

While the identification of transferable skills has considerable appeal, it is not without its limitations. A complete listing of those limitations can be found in the final report of the Occupational Adaptability and Transferable Skills Study completed by Frank C. Pratzner. Four conclusions of the study are given below:

-- Surprisingly little is known about job changing and job mobility.

-- There is no single agreed-upon list of specific skills and personal characteristics generally applicable across a broad range of settings.

-- Transferable skills will not guarantee successful adaptability, but should facilitate it.

-- All skills are potentially transferable, therefore, the process of transfer. . . is of paramount importance.

Based on these limitations alone, it appears that emphasizing transferability skills alone will not provide an adequate means for preparing people to do the jobs of the future. At the same time, however, it is important to recognize and build on the potential utility of such a scheme.

One example of such an effort is the work of Professor James Greenan at the University of Illinois. Greenan's Generalizable Skills Project specifies transferable or generalizable skills. A generalizable skill has three characteristics: It is basic to a particular occupation or training program, it is necessary for success in a particular occupation or completion of a particular program, and it is transferable across occupational settings and classifications. Greenan is currently in the process of identifying generalizable skills in four areas: mathematics, communications, interpersonal relations, and reasoning.

A final alternative answer to the question of the type of preparation needed for jobs of the future is suggested by Harry Braverman, Ivan Berg, and others. These people argue that technology will actually reduce the skills required in most work. As Braverman puts it,

> "The more science is incorporated into the labor process, the less the worker understands of the process; the more sophisticated an intellectual produce the machine becomes, the less control and comprehension of the machine the worker has. In other words the more the worker needs to know in order to remain a human being at work, the less does he or she know."

While this position is openly pessimistic about the future of workers, support for the position is abundant. The press has been filled with stories of workers being displaced by technology. Invariably, these reports present grim scenarios about workers' futures. Robert Schrank of the Ford Foundation has humorously referred to this prospect as the "horse-collar blue-collar blues." In a more serious mood is his question, "Will what happened to the horse-collar, when tractors took the horse's job, happen to the blue-collar, when robots do the blue-collar job?"

The prospect of mass unemployment because of advancements in technology has influenced some labor officials to respond in militant tones. For example, Richard Trumpka, President of the United Mine Workers of America, told a group of miners in western Kentucky that the AMWA would never allow miners to be replaced by machines. At the same time, one of the writers knows of several 30-35-year old miners who have been unemployed for six months or longer and are convinced that they will have to find new occupations because their jobs will soon be done by a robot.

The issues raised by Braverman, Schrank, Trumpka and others reemphasizes the comment made by David Baker; namely, that vocational preparation for the jobs of the future will have to address the psychological and attitudinal issues of work. As Wynn DeBevoise of the Center for Educational Policy and Management at the University of Oregon put it, training students for the workplace is not simply a matter of matching skills to jobs, it is also necessary to consider the worker's sense of job satisfaction and self-concept. This position has been echoed by John Naisbitt in his bestseller Megatrends. According to him, "Whenever new technology is introduced. . . , there must be a counterbalancing human response. . ."

Three Alternatives for Adapting With the New Technology

Three conclusions can be drawn from this brief review of answers to the question of how to prepare students for the jobs of the future. First, there are at least three alternative perspectives about the type of preparation students will need

to adapt with the new technology. Second, each of these alternatives has different assumptions about the meaning of adaptability, the type of skills that will promote adaptability, and the appropriate curricular format for teaching the skills. Third, each of these alternatives is different with regard to the following criteria: occupational flexibility, comprehensiveness of training, self-understanding, and self-management.

For our purposes, adaptability has three overlapping emphases. First, that individuals are able to secure and hold financially and emotionally rewarding employment. Second, that individuals are able to participate in the several social institutions of which they are a part, including the family, school, job, and community. Third, that individuals will be able to perform these two functions across their life spans.

Alternative One

Perhaps the most basic way to adapt with the new technology is to possess the skills that will be needed to do the work that will be available. In this instance, adaptability is determined by either the possession or attainment of specific job skills. Specific job skills represent a particular arrangement of basic skills (e.g., reading, writing, mathematics, human relations, and reasoning) that are appropriate for each specific occupation. Because of the importance of specific skills, the curriculum is competency based. All students in an educational program are expected to master the requisite skills for a particular occupation.

With this alternative, occupational flexibility is determined by the comprehensiveness of the individual's training and by the demand for a particular set of skills. If the skills are not in demand, or if the individual's training is too narrow, then flexibility is determined by the individual's opportunity to be retrained.

As pointed out in the previous section, this particular alternative appears to be of marginal value during periods of rapid technological change. The reality of a changing technology will force single-skilled people to experience cyclical discontinuities in employment. Reentry into the labor force will require one or more periods of retraining. Because the retraining will also be job specific, the new occupation may also become obsolete, thus perpetuating the cycle.

These retraining experiences can be positive ones in that they expand an individual's knowledge and skills as well as their occupational opportunities. At the same time, it is important to recognize that such experiences seriously affect an individual's participation in various social institutions as well as his or her self-esteem.

The prospect of discontinuities in employment has important implications for vocational students. According to David L. Goetsch, Chairman of Industrial Education at Okaloosa-Walton Junior College in Niceville, Florida, "Vocational students must learn to cope with the rapid technological changes which will occur on the job for the rest of their working lives. . . The future worker cannot rely on the content associated with a particular occupation, because this information is likely to rapidly become obsolete."

Goetsch's solution to this problem is to impress upon students the idea that "the skill of learning is a necessary process in coping with change." It is worth noting that Goetsch's comments echo those made by Alfred Toffler in his book Future Shock, "Tomorrow's illiterate will not be the man who can't read: He will be the man who has not learned to learn."

Alternative Two

Adaptability from the perspective of this alternative is influenced by the availability of multiple occupational opportunities at any particular time. Thus, this alternative provides greater occupational flexibility than does Alternative One. The increase in flexibility is obtained through the student's ability to transfer basic skills across occupational or learning situations. Individuals not only have a command of the basic skills, but they also recognize how the basics may be applied or transferred to multiple situations.

An example of a program that operates along these lines is the Allied Health Career Programs at Southern Illinois University at Carbondale. In this particular program, students receive training in respiratory therapy and X-ray technology. Upon completion of the program, students are eligible for registry in the health area of their choice and possess minimal competency in the other. The total program takes no longer to complete than would a single program alone. This advantage exists because of the transfer of basic knowledge and skills across two compatible occupations. The concrete result of the program for students is increased occupational flexibility.

The training in Alternative Two is more comprehensive than it is in Alternative One. Training in the basic skills retains its central importance, but the reasons for learning the skills are changed. Skills are not taught as being applicable to only a specific job; in this case, they are taught because of their importance to several jobs.

The additional emphasis given to transferable skills in Alternative Two also has implications for students' adaptability over the life span. As James O'Toole of the University of Southern California school has noted, "Those who will succeed in the work force will be those who have learned to learn. . . it is basic academic skills, not narrow vocational training, which will be the chief contribution to a worker's employability, retention, and success."

According to Roger Henry, Chairman of Industrial Arts at Garden Spot High School in New Holland, Pennsylvania, learning for transfer can be enhanced "by teaching broad concepts (for example, materials instead of wood or metal, machine principles instead of machine operation) and by emphasizing research and problem solving skills rather than manipulative skills." It is through instruction like this that future workers will develop the attitude to accept change and the capacity to learn new skills and information associated with a changing technology.

Alternative Three

In the cover story for the week of October 18, 1982, the editors of Newsweek stated that "Adapting to the new economic order will

involve a tremendous amount of individual displacement and pain." They also questioned, "Will unemployment cause an influx of social problems such as crime, divorce, alcoholism, child abuse, etc.?" The editors of Newsweek recognize the need for skills that would allow individuals to manage the transitions that occur throughout their lifetimes. That is the focus of adaptability in this alternative.

Curricula for Alternative Three would emphasize students' self-understanding. Students begin to recognize their own abilities, interests, and attitudes, and to compare themselves with others. Through this process of comparison, self-understanding, self-awareness, and self-acceptance are promoted, as is self-responsibility.

Alternative Three also represents the proactive management of life transitions. This alternative maximizes occupational flexibility because it assumes that the future worker must be prepared to confront and adapt to continual change in order to survive. Survival means that one learns to manage changes as opposed to being managed by them. Another feature of this position is the assumption that students will continue to develop throughout their life spans. These developmental changes in adults may result in changes of occupations; thus, occupational flexibility is at its peak in this alternative.

Management of life transitions, especially occupationally related ones, assumes that an individual possesses the basic skills. It also assumes that the individual is able to transfer skills across situations. In addition to these two types of skills, the management of life transitions requires that an individual is able to recognize and act upon changes observed in one's self or in one's environment.

Several attempts have been made to identify the basic features of the transition. Lawrence Brammer and Philip Abrego of the University of Washington have consolidated these various efforts into five skills:

1. Recognizing and responding to transitions--modifying a personal style of responding.
2. Assessing and utilizing external symptoms--using external support systems to bring about change, such as family, friends, training programs, etc.
3. Assessing and utilizing internal symptoms--using personal awarenesses as the impetus for change and personal strengths as the source of energy for change.
4. Reducing and managing emotional stress.
5. Planning and implementing change--using discrepancies between existing and desired conditions to develop an action plan for determining and implementing new options.

The integration of these skills represents the basis of self-management. When they are combined with basic and transferable skills, individuals have the greatest probability of establishing occupational flexibility.

Some would argue that the type of skills listed above cannot be taught in vocational education because they lack specificity. Others, like Roger Henry, argue that "vocational education is a unique area of public general education that can teach not only occupational clusters and general conceptual knowledge, but can also foster adaptability, build technical literacy, and provide leisure skills through experience." If Henry is at all accurate, then vocational education seems to be a place to emphasize change skills.

A summary of the three alternatives and their potential for adapting with the new technology is presented in Figure 1. As indicated, the basic skills represent the foundation of each alternative. However, students' potential for adapting with the new technology is maximized with the addition of transferable skills and change and transition skills. Thus, Alternative Three provides students the greatest probability of preparing for the jobs of the future and living a full and satisfying life.

The Current State of the Three Alternatives

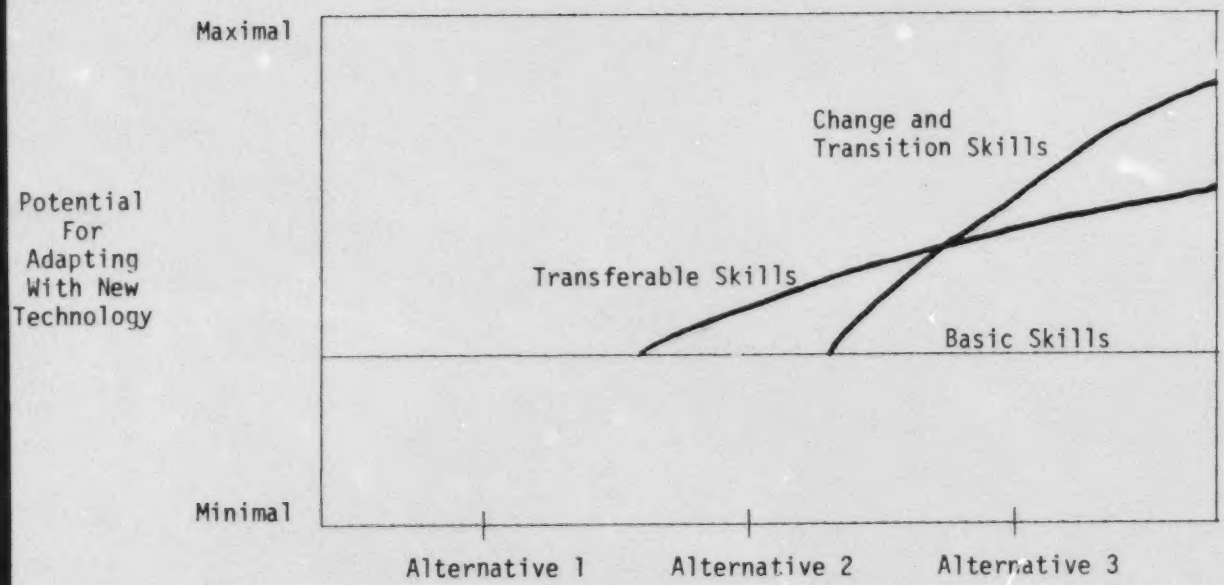
With three alternatives for the preparation of students for future jobs, an important question emerges. The question is: What emphasis should be given to each alternative?

Answers to that question depend on different points of view of the people being asked. Some argue, for example, that the appropriate focus of vocational education is work content skills (Alternative One). From this position, the identification of specific job competencies followed by the development and implementation of curricula to teach these specific competencies would be emphasized. A different point of view is stated by Diane Ravitch in the Phi Delta Kappan:

> Most work in the future will require people who can think, plan, adapt to changing conditions, and make conditions, we will look to the schools to nurture in the young such traits as initiative, advanced reasoning skills, judgment, independence, and self-discipline.

From this position, transferable (Alternative Two) and/or change skills (Alternative Three) would be emphasized.

Figure 1: Comparing the potential for adaptibility with the new technology of three alternatives for preparing students for the jobs of the future.



Most of the research indicates that schools are doing an unsatisfactory job of following any of the alternatives. For example, a report in School Business Affairs on a word processing program (Alternative Two) offered at a high school in Milwaukee, indicated that students in the program lacked basic skills required for word processing, such as the ability to spell and punctuate properly, knowledge of proper sentence construction, and the use of grammar (all Alternative One).

Not only are high school students lacking the basic skills to work with the new technology, but so are workers in business and industry. In a national study conducted by the Center for Public Resources (CPR), executives from business, industry, and secondary education were asked to rate the level of competency of high school graduates in the following basic skills areas: reading, writing, speaking and listening, mathematics, science, and reasoning. The conclusion of the CPR report indicated that business and industry perceived high school graduates as being inadequately prepared in each of the assessed areas. A second conclusion, one that is perhaps more noteworthy, was the discrepancy between the ratings given by school officials and those reported by the employers of students. School administrators believed that graduates were, on the average, competent in each of the basic skills.

A study similar to the CPR study is being conducted in conjunction with this grant. Fortune 500 companies with their corporate offices in Illinois are being asked to indicate the relative importance of certain basic skills (reading, writing, speaking and listening, mathematics, science, and reasoning) for entry-level employees.

They are also asked to report new employees' degree of competence for each skill. Preliminary results indicate that these companies want entry-level employees to be competent in each of these basic areas. The results also indicate that the level of performance for entry-level employees is unsatisfactory when compared with companies' expectations.

These findings have important implications, both for business and for vocational education. For business and industry, the implications will be measured in decreased productivity and in dollars spent for remedial training programs. Clifton Bardsley, Personnel Manager for the McDonnell-Douglas Corporation, "The workforce is not being trained in proper areas. Without a solid education program, the problem of productivity cannot be solved." This sentiment has been echoed by David Baker. According to him, "An upgrading of education is necessary for industry to come out of its present slump."

Industry's response to employees' lack of preparation in the basic skills has been to provide remedial training. In fact, according to Madeline Hemmings, 35 percent of the companies surveyed in a recent study provide, indeed repeat, basic high school training for their employees. AT&T alone spends six million dollars a year to train 14,000 employees in basic reading and mathematics competencies.

The implication for vocational education is not as immediate, but is nonetheless undesirable. Specifically, vocational education must initiate efforts to more adequately prepare students for jobs in the new technology, or risk being replaced by businesses who will do their own educating. This means providing some guarantee that

vocational education students will have a sound preparation in basic education as well as in technical education, and that they will be able to transfer that knowledge and skill to occupational settings. According to David M. Hull of the Center for Occupational Research and Development in Waco, Texas, "The challenge to the schools, especially the comprehensive high schools. . . is to provide greater mathematics, physics, and communication skills along with a hands-on approach that will capture the vocational-education students' imagination and interest." Failure to meet this challenge will result in students' inability to find work, or to adapt to changes that will accompany the new technology.

The Nobel Prize-winning economist, Theodore Schultz, has written that "Mankind's future is not preordained by space, energy, and cropland. It will be determined by the intelligent evolution of humanity." The new technology is helping to shape that intelligent revolution. It is helping by insisting that future workers will "need to be generalists, flexible enough to change courses and train for new careers with a minimum of disruption." We in education should be as insistent. The result will be positive.

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PERCEPTION OF BUSINESS AND INDUSTRY: BASIC SKILLS NECESSARY FOR SUCCESSFUL EMPLOYMENT COMPARED TO COMPETENCIES OF ENTRY LEVEL EMPLOYEES

ILLINOIS
STATE BOARD OF
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Department of
Adult, Vocational
and Technical
Education

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We are living in a period of socio-technological revolution (Toffler, 1980). Futurists agree that society and technology are experiencing accelerating rates of change, and in order to survive, it is imperative that individuals develop a capacity to adapt and modify their lives accordingly (Daniels, Karmos, and Junge, 1983). The most salient and pervasive trend within this change is the shift from an industrial society to an information society (Naisbitt, 1982). This transition will rapidly accelerate with continual advances in communications and computer technology. Robotics and computers will increasingly perform the routine and dangerous tasks, while workers will be expected to be more functional in the intellectual and problem solving skills. "The unthinking jobs will all be done by machines," as stated by James O'Toole of the University of Southern California's business school. "Those who will succeed in the work force will be those who have learned to learn." Educators will be held accountable to adequately prepare youth with the necessary skills to not merely cope with the transition but to become proactive learners and managers of the transition.

Although there is a realistic need for skills that will provide for career flexibility, there is a growing concern that our educational system is not sufficiently preparing youth for the future in work. The report by the National Commission on Excellence in Education (NCEE) bluntly described our country as "a nation at risk." It further stated that "the educational foundations of our society are being eroded by a rising tide of mediocrity that threatens our very future as a nation and as a people." John Naisbitt (1982) in Megatrends, declares that "the generation graduating from high school today is the first generation in American history to graduate less skilled than its parents."

Many high school graduates in our country do not have a foundation in basic academic capabilities. The NCEE documents support for alarm, "many 17-year-olds do not possess the 'higher-order' intellectual skills we should expect of them. Nearly 40 percent cannot draw inference from written material, only one-fifth can write a persuasive essay, and only one-third can solve a mathematics problem requiring several steps." Additional alarming data has been provided from the Chicago public schools, the second-largest public school system in the nation. Superintendent Ruth B. Love (1981) reported that the average reading level for eighth grade students was at seven years and three months. This average was considerably lower than the national norm. The problem was further compounded by an average of 54,000 students absent each day and 15,000 students dropping out each year. The frustration of teachers was illustrated by Gladys Patrick, a teacher for 26 years, in her statement, "I'm mad at society for giving these kids a diploma they can't read." Without a foundation in reading skills, computer illiteracy is an obvious conclusion.

Basic skills deficiencies among secondary school graduates entering the work force was reported by the New York Center for Public Resources (1982) in Basic Skills in the United States Work Force. In this study conducted by the Center for Public Resources (CPR), a survey was distributed to vice presidents of personnel or human resources from corporations across the nation. The survey was sent to 2,135 corporations representing different types of industry with manufacturing comprising the largest segment.

The survey requested information regarding the background of the company, perceptions of the nature and level of basic skills requirements for working, and perceptions of the deficiencies of the work force in these skill areas.

The recipients were given definitions related to basic skill competencies in the following areas: reading, writing, speaking and listening, mathematics, science, and reasoning. They were asked to rate the level of competency of secondary school graduates and non-graduates for the respective skill categories in a relatively open-ended response format Responses were received from over 400 companies, however, only 184 gave detailed information regarding skill deficiencies. Over 200 companies recognized a serious problem but did not provide the level of detail requested. The length of the survey and the write-in response format may have been a factor in the depressed response rate.

The conclusion of the CPR report indicated that business and industry perceived high school graduates as being inadequately prepared in each of the assessed areas. These deficiencies were pervasive across various job descriptions and types of companies. Perhaps more noteworthy, was the conclusion that basic skills inadequacy not only minimizes being hired but may also impact job advancement and subsequent employee morale and turnover.

The implication of inadequate preparation in basic skills for business and industry is measured in decreased productivity and in dollars spent for remedial training programs. As stated by Clifton Bardsley, Personnel Manager for the McDonald-Douglas Corporation, "Without a solid education program, the problem of productivity cannot be solved." Employees with academic deficiencies cost United States businesses millions of dollars each year due to errors in inventory control and communication breakdown. Industry's response to employees' lack of preparation has been to provide remedial training programs. Included in a report entitled America: Education: An Economic Issue, 35 percent of the companies surveyed provide remedial high

school training for their employees (Hemmings, 1982). AT&T reported spending six million dollars a year to train 14,000 employees in basic reading and mathematics (CPR, 1982). The Sperry Corporation has developed a program devoted exclusively to listening skills (Murdale, 1980). The implication for education is clear: Education must improve its ability to provide the basics of education or risk being replaced by businesses performing their own educating.

There is little doubt that education will be expected to play a major role in enhancing future students' career versatility. Business will expect entry level personnel to possess the skills that will enable them to contribute to corporate goals while attaining personal enrichment. As the actual employers of future workers, American business understands the skills important for success, and can contribute valuable information related to the capabilities necessary to adapt and function in the workplace. However, it has been difficult translating these perceptions into specific assessments of the nature and level of those skills necessary for job maintenance and advancement (CPR 1982). There have been few attempts to understand the perspective of business and industry, and companies have not adequately come forth with their needs.

The objective of the present study is to facilitate communication and collaboration between the business community and the educational system by assessing, clarifying, and articulating those skills that will enhance individual adaptability as well as industrial growth. This study, refined after the CPR report, was designed to survey the perceptions of business and industry relative to the importance of specific basic skills for successful employment, while comparing these views to their perceptions of competence in the respective skills of entry-level employees with a secondary education.

Method

Instrument

The Basic Skills Questionnaire (BSQ) was developed by the authors utilizing the CPR (1982) survey as a model. A copy of the complete questionnaire is presented in Appendix A. The questionnaire consisted of thirty items divided into the following basic skill categories: mathematical, writing, reading, speaking and listening, reasoning, and scientific. Each item represented a specific competency subsumed within a skill category. For example, sample competencies within the mathematical category were: "Perform the computations of addition, subtraction, multiplication, and division using whole numbers, fractions, and decimals;" and "Make and use measurements in standard units." The competencies were extracted from definitions formulated by the CPR (1982) to operationalize basic skills. Additional blank spaces were provided in the questionnaire to allow the listing of other important skills not specifically stated.

The BSQ was designed to survey two types of information directed at entry-level employees with a high school diploma or additional vocational training. Respondents were instructed to indicate on a five-point Likert-type scale the relative importance of the various basic skills for individuals to successfully perform the responsibilities of their job. Respondents were also requested to report the degree of competence possessed by entry-level personnel on each of the skills. For each item there were five degrees, graduated from low through moderate to high, representing ascending levels of importance and levels of competence. Respondents were asked to circle the perceived degree or level. This format differs from the CPR survey which employed written responses. The BSQ was an improvement on the efficiency of responding and the subsequent quantitive analysis of perceptions.

Procedure

A letter of transmittal was constructed to convey information to the recipient regarding the project. The letter is provided in Appendix B. The letter described the background of the project, explained the purpose of the BSQ, estimated the amount of response time, and emphasized the importance of the response. Special effort was given to recognize the need for collaboration between business and education and the value of a respondent's feedback. The letter was submitted in a package which also included the BSQ and a self-addressed return envelope.

The BSQ package was mailed to the Personnel Director of 116 of the largest companies with a corporate office in Illinois according to Fortune 500 and Forbes 798. These corporations were selected to insure a sample size of companies with a large number of employees and a broad range of job descriptions. The types of companies represented interests in finance, manufacturing/mining, service, utilities, and insurance. A section of the questionnaire was provided for the designation of the respondent's type of company.

Fifty-one responses were returned, a response rate of 44%. This compares to a response rate of only 9% of companies which have detailed information to the CPR (1982) survey. Although response rates may vary from study to study dependent on the population sample, a review of the initial response rate for experimental studies yielded an average rate of 48.1% (Borg and Gall, 1983). The BSQ rate was close to this average. Because of the competetive nature of business, many companies are reluctant to release "in-house" information. This may especially be a factor when the information requested was related to the basic skill competencies of their own employees.

Results

The primary objectives of this project were to survey the perceptions of business and industry regarding the following issues:

1) Specific basic skills considered important for successful employment.
2) Competence in basic skills of entry-level personnel with secondary education.
3) Comparison of basic skills considered important for successful employment and the competence in basic skills of entry-level personnel with secondary education.

Information was collected by an analysis of responses to the BSQ. The data was divided into two sets of variables. One set of variables represented the degree of importance for success relative to the following skill areas: mathematics, writing, reading, speaking/listening, reasoning, and science. The second set, from the same sample of respondents, represented the perceived competence of entry-level employees in the respective basic skill areas.

A mean degree of importance and competence was calculated for each skill category. The categorized skill means were calculated as the sum of the corresponding subordinate item responses divided by the number of items for a particular category. The mean level of response for each skill with all respondents is illustrated in Table 1. The skills are listed in ascending order according to mean degree of importance for success. Speaking/listening and writing skills were considered highly important for success. They were closely followed by reasoning and reading skills. Only moderately important for success were the mathematical and scientific skills. For comparison, the degree of competency means are also presented in Table 1.

Table 1

Skill means and standard deviations for importance, competence, and discrepancy between importance and competence.

Skill	Importance Mean	Std. Dev.	Competence Mean	Std. Dev.	Discrepancy Mean	Std. Dev.
Speaking & Listening	4.08	0.70	2.91	0.66	1.15	0.83
Writing	4.06	0.79	2.69	0.96	1.38	0.98
Reasoning	3.78	0.83	2.57	0.61	1.20	0.96
Reading	3.62	0.79	2.73	0.79	0.88	0.89
Mathematical	3.05	0.61	2.41	0.54	0.63	0.53
Scientific	2.59	1.06	2.07	0.73	0.52	0.73

The skill discrepancy means were computed as the average difference between the degree of importance and degree of competence. They are presented in Table 2 and ordered according to magnitude in difference. The largest discrepancy between importance for success and degree of competence was in writing skills, closely followed by reasoning, and speaking/listening skills. Differences are also reported for reading, mathematical, and scientific skills. A paired-comparisons t test was performed between the set of importance variables and the respective competence variables using the Statistical Analysis System computer package (SAS Institute, 1982). The analysis yielded a significant difference between the importance and competence means for all skill categories at the .0001 level. This indicates that there is a significant difference between the level of basic skills perceived important for success and the perceived competence of entry-level personnel in those skills. This difference was in the direction of perceived deficient capabilities for all basic skill categories.

An analysis of particular item reponses from the BSQ provided more descriptive information concerning specific capabilities important for success and the nature of deficiencies. A complete listing of the items with response means for importance, competence, and a difference between the two is provided in Table 3. Inspection of the results related to specific writing and speaking/listening competencies shows that most of these abilities were considered highly important. The most highly rated skill was following instructions or directions in the performance of a specific task. Answering and asking questions concisely and coherently, and speaking with others in a relaxed and self-confident manner was also rated highly from the area of speaking/listening skills. The most notable deficiencies were reported in the

Table 2

Paired-comparisons t test between skill importance and skill competence.

Skill	Discrepancy Mean	Standard Error of Mean	T*
Writing	1.38	0.13	9.87
Reasoning	1.20	0.13	8.81
Speaking & Listening	1.15	0.11	9.73
Reading	0.88	0.12	6.98
Mathematical	0.63	0.07	8.32
Scientific	0.52	0.10	4.83

* all significant at .0001

Table 3

Skill category and item means.

Category and Item	Importance $\bar{X}$	Competence $\bar{X}$	Difference Between Means
Mathematical Skills	3.05	2.41	.64
1. Perform the computations of addition, subtraction, multiplication, and division using whole numbers, fractions, and decimals.	4.29	3.14	1.15
2. Use effectively the mathematics of: ratios, percentages, averages, roots and powers.	3.04	2.23	.81
3. Use effectively the mathematics of algebra and geometry.	2.29	1.86	.43
4. Make and use measurements in standard (English) units.	3.43	2.94	.49
5. Make and use measurements in metric units.	2.31	1.80	.51
6. Use elementary concepts of probability and statistics.	2.21	1.71	.50
7. Solve word problems involving time, weight, distance, and volume.	2.78	2.12	.66
8. Use a calculator to perform basic arithmetic operations to solve problems.	4.06	3.31	.75
Writing Skills	4.06	2.69	1.37
1. Select, organize, and relate ideas and to outline and develop them in coherent paragraphs.	4.02	2.65	1.37
2. Write standard English sentences with correct punctuation, capitalization, plural forms, possessives, and spelling.	4.45	2.90	1.55
3. Write standard English sentences with correct verb forms, sentence structure, and word choice.	4.35	2.86	1.49

Category and Item	Importance $\bar{X}$	Competence $\bar{X}$	Difference Between Means
4. Improve one's own writing by correcting errors, restructuring, and rewriting.	4.10	2.65	1.45
5. Gather information from primary and secondary sources; to write a report using this research; to quote, paraphrase, and summarize accurately; and to cite sources properly.	3.39	2.34	1.05
Reading Skills	3.62	2.73	.89
1. Identify and comprehend the main and subordinate ideas in a written work.	3.90	2.84	1.06
2. Vary one's reading speed and method according to the type of material and one's purpose for reading.	3.45	2.56	.89
3. Use the features of printed materials, such as table of contents, preface, introduction, titles, index, glossary, appendix, and bibliography.	3.41	2.78	.63
4. Define unfamiliar words by decoding, using clues, or by using a dictionary.	3.70	2.74	.96
Speaking and Listening Skills	4.08	2.91	1.17
1. Engage critically and constructively in the exchange of ideas.	4.06	2.76	1.30
2. Answer and ask questions concisely and coherently.	4.27	3.06	1.21
3. Conceive and develop ideas about a topic for the purpose of speaking to a group; to choose and organize related ideas; to present them clearly in standard English.	3.16	2.24	.92
4. Follow instructions or directions in the performance of a specific task.	4.61	3.43	1.18

Category and Item	Importance $\bar{X}$	Competence $\bar{X}$	Difference Between Means
5. Speak with others in a relaxed and self-confident manner.	4.22	3.10	1.12
Reasoning Skills	3.78	2.58	1.20
1. Identify and formulate problems, as well as the ability to propose and evaluate ways to solve them.	4.00	2.66	1.34
2. Recognize and use inductive and deductive reasoning, and to recognize fallacies in reasoning.	3.65	2.44	1.21
3. Comprehend, develop and use concepts and generalizations.	3.57	2.48	1.09
4. Distinguish between fact and opinion.	3.90	2.68	1.22
5. Draw reasonable conclusions from sources of information and defend them rationally.	3.80	2.62	1.18
Scientific Skills	2.59	2.07	.52
1. Apply basic scientific/technical solutions to the appropriate problems.	3.14	2.35	.79
2. Understand the basic principles of mechanics and biology.	2.38	2.02	.36
3. Understand the basic principles of chemistry and physics.	2.26	1.85	.41

area of writing skills. Writing standard English sentences with correct punctuation, spelling, grammar, word usage, and structure were cited as the most deficient of all competencies. The improvement of one's own writing by correcting errors and rewriting showed the next highest degree of deficiency.

The results in the area of reasoning skills also demonstrated important requirements for successful employment and wide discrepancies between their requirements and competence. Most noteworthy was the ability to identify problems, and subsequently, propose and evaluate ways to solve them. Other skills included distinguishing between fact and opinion, and drawing reasonable conclusions from sources of information. An important concern in the area of mathematics was the ability to perform the computations of addition, subtraction, multiplication, and division using fractions and decimals, as well as with whole numbers. The ability to extract and comprehend the main and subordinate ideas in written work was also a considerable concern in the area of reading skills.

Additional valuable information was extracted from the corporate open-responses concerning other important skills for successful employment not stated in the BSQ. The following is a listing of those most frequently cited skills or characteristics of a successful employee:

1. Good attitude toward work. This is probably considered the most important affective characteristic of a future employee.

2. Willingness to adapt and learn. Demonstrating that one is willing and able to learn new material may compensate for lack of knowledge in a particular content area.

3. Getting along with others; the ability to effectively interact and co-operate with fellow workers.

4. A mannerly, neat, and appropriate appearance.

5. Promptness and regular attendance.

6. Familiarity with basic computer knowledge, and the ability to interact with a computer.

7. Good communication skills, both oral and written. Ability to listen is essential in effective communication.

Discussion and Conclusions

Business and industry in Illinois, the second largest state in number of Fortune 500 companies, is experiencing secondary school graduate employees as being deficient in basic academic skills. Employers want and need entry-level employees to be competent in these skill areas. They represent the necessary foundation of more highly complex intellectual skills required in an increasingly sophisticated and versatile work environment. Employment capability, flexibility, and satisfaction are dependent on a high degree ability in these basics. Deficiencies in the basics is no longer a novel perspective; it is a trend pervasive across the nation. However, the findings from this study hopefully provide more descriptive information in relation to specific competencies critical for successful employment and adaptability.

The results of this study demonstrate a significant difference in business executives perception of the level of basic skills important for success and the competence of secondary school graduates. This finding permeates the skill areas of writing, speaking/listening, reasoning, reading, math, and science. These results are similar to those reported in the CPR (1982) survey. Several results are particularly noteworthy, specifically the importance of communication and reasoning skills to future employers. They are demanding high level competencies in speaking, listening, writing, and

problem solving skills. To their dismay, business perceives the schools providing an inferior product in these skill areas.

An information-intensive society requires writing skills more than ever before. In spite of this need, respondents identified "writing standard English sentences" as the most deficient competency. The ability to spell and punctuate properly, the use of appropriate grammar, and correct sentence structure are merely prerequisites to composite skills of word processing and synthesizing computer programs. This perception of deficient writing skills is congruent with other observations of employee failure in writing memos, letters, and business reports (Mundale, 1982). In response, companies will take it upon themselves to enhance succinct and coherent writing skills by offering their own programs. Honeywell conducts such courses as Business English, and Effective Memo and Report Writing (Mundale, 1982).

Speaking/listening was rated the most important of all skill categories, and "following verbal instructions or directions" was rated the highest of all competencies. This response paralleled CPR's (1982) report that business executives nearly always noted speaking and listening skills as an important requirement, and "this was true for all job categories in all industries." The Sperry Corporation refers to listening as the most used of the basic skills and has developed a campaign promoting good listening skills (Mundale, 1982). The campaign involves advertisement, seminars, and a training program. This emphasis on speaking/listening skills may be the most pertinent empirical result of the BSQ study relative to implications for education.

For many, the cry of "back to basics" throughout our nation is interpreted as intesifying more of the same traditional education. If quantity of time or product is an answer to our educational crisis, why

haven't students acquired listening skills after 12 years of listening to teachers talk? As suggested by Goodlad (1983), the educational system has not recognized the need for more training, involvement, and practice in the process of public speaking and active listening. Any curriculum designed to prepare students for future successful careers must incorporate participation in active listening skills. Active listening involves the cognitive management of acute attention, elaborate reflection, and empathic feedback. These capacities are imperative for the increasingly important activities of interacting effectively with others and solving problems.

The changing nature of work, especially for blue-collar technicians, will impact dramatically on the prominence of reasoning skills. Survey results demonstrated that business and industry recognize the significance of reasoning skills for future work. Future workers will have less rigidly defined job descriptions as automation, robotics, and computers perform the mundane tasks. The adaptable worker will utilize the other basic skills in consort with reasoning skills to solve problems rather than perform rote tasks. Identifying problems, generating alternative solutions, distinguishing between fact and opinion, and formulating reasonable conclusions will be instrumental in the increase of decision-making responsibilities.

Additional deficits are reported in reading, mathematics, and science skills. The ability to comprehend the main ideas of text showed the largest deficit of the reading competencies. The significance of reading in an information-era need not be elaborated. Similar to the CPR (1982) study, the greatest mathematical deficit was in computations utilizing whole numbers, fractions, and decimals. The skill category showing the smallest discrepancy between skill importance and competence is in the science area. This is

somewhat surprising in light of the emphasis on advanced technology. Possibly the respondents have not observed a relationship between esoteric science skills and applied job descriptions. The science skills may not yet be considered important across a wide range of job categories. Further inquiry is necessary to determine how prevalent these skills will be needed by individuals in the future.

As the United States proceeds through the transition from an industrial to an information society, a poignant message is being delivered to our educational system from a variety of sources. To insure, not only the well-being, but the very survival of future youth in the changing U. S. workplace, they need to be trained in the proactive management of their career flexibility. These complex transition skills are based on a foundation of basic academic competencies, however this foundation currently has been declared dangerously fragile. The immediate challenge to the schools is to reinforce this foundation with greater emphasis on teaching the basics and the transfer of these skills to occupational settings.

The message from business and industry to the educational community centers on the need for increased competence in communication and problem solving skills. Present educational practices are not adequately preparing youth in these areas. Teacher talk prevails as the most dominant classroom activity in our schools (Goodlad, 1983). Students ostensibly listen, respond when called upon, and strive for competency in multiple-choice exams. Unfortunately, this dydactic arrangement has not sufficiently prepared youth for the expectations of successful employment. The emphasis on accumulating knowledge as opposed to processing, interacting, and elaborating with information is a factor in students not transfering skills outside the

classroom. Goodlad (1983) states that students "rarely planned or initiated anything, read or wrote anything of some length, or created their own products; they scarcely ever speculated on meanings, discussed alternative interpretations, or engaged in projects calling for collaborative effort." Students are more than receptacles into which teachers pour knowledge. Teaching is more than telling, and learning is more than acquiring and demonstrating mastery of facts. In order to insure transferability of basic skills into the workplace, the teacher must engage the student as an active participant in the learning process. Prospective employees will expect them to be active participants in the workplace.

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Appendix A

BASIC SKILLS QUESTIONNAIRE

The purpose of this questionnaire is to determine the basic skills which are necessary for individuals to successfully perform their responsibilities in your company, and the degree to which entry level employees with high school diplomas or vocational training can perform those skills. In the spaces provided, please specify your business, write your name, and check the major focus of your company.

Name of Company: _____

Person Completing Form: _____

Focus of Company: _____ Finance/Credit
_____ Manufacturing/Mining
_____ Service
_____ Utilities
_____ Insurance

Directions: In the left column, please indicate with a circle the degree to which each of the skills listed below is important for the success of entry level employees with a high school diploma or vocational training.

In the right column, please indicate with a circle the degree of competence already possessed by entry level employees with a high school diploma or vocational training for each of the skills listed below.

EXAMPLE:

IMPORTANCE FOR SUCCESS	SKILL	COMPETENCE AT ENTRY
Low Moderate High 1 2 3 (4) 5	Add and subtract common fractions	Low Moderate High 1 (2) 3 4 5

Importance For Success						MATHEMATICAL SKILLS	Competence at Entry				
Low		Moderate		High			Low		Moderate		High
1	2	3	4	5	1.	Perform the computations of addition, subtraction, multiplication, and division using whole numbers, fractions, and decimals.	1	2	3	4	5
1	2	3	4	5	2.	Use effectively the mathematics of: ratios, percentages, averages, roots and powers.	1	2	3	4	5
1	2	3	4	5	3.	Use effectively the mathematics of algebra and geometry.	1	2	3	4	5
1	2	3	4	5	4.	Make and use measurements in standard (English) units.	1	2	3	4	5
1	2	3	4	5	5.	Make and use measurements in metric units.	1	2	3	4	5
1	2	3	4	5	6.	Use elementary concepts of probability and statistics.	1	2	3	4	5
1	2	3	4	5	7.	Solve word problems involving time, weight, distance, and volume.	1	2	3	4	5
1	2	3	4	5	8.	Use a calculator to perform basic arithmetic operations to solve problems.	1	2	3	4	5
						WRITING SKILLS					
1	2	3	4	5	1.	Select, organize, and relate ideas and to outline and develope them in coherent paragraphs.	1	2	3	4	5
1	2	3	4	5	2.	Write standard English sentences with correct punctuation, capitalization, plural forms, possessives, and spelling.	1	2	3	4	5
1	2	3	4	5	3.	Write standard English sentences with correct verb forms, sentence structure, and word choice.	1	2	3	4	5
1	2	3	4	5	4.	Improve one's own writing by correcting errors, restructuring, and rewriting.	1	2	3	4	5
1	2	3	4	5	5.	Gather information from primary and secondary sources; to write a report using this research; to quote, paraphrase, and summarize accurately; and to cite sources properly.	1	2	3	4	5

Importance For Success						Competence at Entry				
Low		Moderate		High		Low		Moderate		High
READING SKILLS										
1	2	3	4	5	1. Identify and comprehend the main and subordinate ideas in a written work.	1	2	3	4	5
1	2	3	4	5	2. Vary one's reading speed and method according to the type of material and one's purpose for reading.	1	2	3	4	5
1	2	3	4	5	3. Use the features of printed materials, such as table of contents, preface, introduction, titles, index, glossary, appendix, and bibliography.	1	2	3	4	5
1	2	3	4	5	4. Define unfamiliar words by decoding, using clues, or by using a dictionary.	1	2	3	4	5
SPEAKING AND LISTENING SKILLS										
1	2	3	4	5	1. Engage critically and constructively in the exchange of ideas.	1	2	3	4	5
1	2	3	4	5	2. Answer and ask questions concisely and coherently.	1	2	3	4	5
1	2	3	4	5	3. Conceive and develope ideas about a topic for the purpose of speaking to a group; to choose and organize related ideas; to present them clearly in standard English.	1	2	3	4	5
1	2	3	4	5	4. Follow instructions or directions in the performance of a specific task.	1	2	3	4	5
1	2	3	4	5	5. Speak with others in a relaxed and self-confident manner.	1	2	3	4	5
REASONING SKILLS										
1	2	3	4	5	1. Identify and formulate problems, as well as the ability to propose and evaluate ways to solve them.	1	2	3	4	5
1	2	3	4	5	2. Recognize and use inductive and deductive reasoning, and to recognize fallacies in reasoning.	1	2	3	4	5
1	2	3	4	5	3. Comprehend, develope, and use concepts and generalizations.	1	2	3	4	5

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Importance For Success						Competence at Entry					
Low		Moderate			High		Low		Moderate		High
1	2	3	4	5	4. Distinguish between fact and opinion.		1	2	3	4	5
1	2	3	4	5	5. Draw reasonable conclusions from sources of information and defend them rationally.		1	2	3	4	5
					SCIENTIFIC SKILLS						
1	2	3	4	5	1. Apply basic scientific/technical solutions to the appropriate problems.		1	2	3	4	5
1	2	3	4	5	2. Understand the basic principles of mechanics and biology.		1	2	3	4	5
1	2	3	4	5	3. Understand the basic principles of chemistry and physics.		1	2	3	4	5
					In the spaces provided below, you may, if appropriate, add any other skills which are necessary for the success of employees in your company.						
1	2	3	4	5	1. _____		1	2	3	4	5
1	2	3	4	5	2. _____		1	2	3	4	5
1	2	3	4	5	3. _____		1	2	3	4	5
1	2	3	4	5	4. _____		1	2	3	4	5

Appendix B

Southern Illinois
University at Carbondale
Carbondale, Illinois 62901

Department of Guidance and Educational Psychology

June 30, 1983

Personnel Director
Sun Electric Corp.
One Sun Pky.
Crystal Lake, IL 60014

Dear Personnel Director:

We have been awarded a contract from the Illinois Department of Adult Vocational and Technical Education to investigate and identify the basic skills necessary for individuals to successfully gain employment, perform required job responsibilities, and adapt to new job tasks. As the actual employers of future workers, American business probably best understands the nature and level of basic skills required to maintain and adapt to new jobs. Your company was selected as a source of information among other companies that are considered the largest firms with headquarters in Illinois.

A questionnaire is enclosed to survey two types of information directed at entry-level employees with a high school diploma or vocational training. At this level, we are interested in your perception of the basic skills necessary for successful employment in your company. We are also interested in your views regarding the degree of competency, relative to these skills, that entry-level personnel with a high school diploma or vocational training bring to your company.

It should take less than 15 minutes to complete this questionnaire. Directions for completing the questionnaire are included. If you are unable to complete this form, please forward it to a person who can provide the information requested. When you have finished, please use the enclosed addressed envelope and return the completed form to us.

Our research recognizes and emphasizes the need for more collaboration between business and secondary education to insure that students acquire the skills that you perceive as important to the work place. Your feedback will provide valuable information that will impact future policy proposals in vocational education. In turn, we hope that the results of our project will help business and industry. Upon request, we will send a summary of our findings to interested participants. If you are interested, please indicate so by including an addressed envelope from your company with the completed questionnaire.

If you have questions about our research, please fell free to contact us. Thank you for your assistance in this important and timely project.

Sincerely,

Harry Daniels, Ph.D. Joe Karmos, Ph.D.
Project Co-directors

POLICY PROPOSALS
FOR PREPARING STUDENTS
TO ADAPT WITH THE
NEW TECHNOLOGY

ILLINOIS
STATE BOARD OF
EDUCATION

Department of
Adult, Vocational
and Technical
Education

Submitted by:
M. Harry Daniels
Joseph S. Karmos
Ann Karmos

Policy Proposal:

1. It is expected that employability across the life span will be directly related to individuals' mastery of the "Five R's": Reading, Writing, Arithmetic, Relationships and Reasoning. Because of this prediction increased emphasis should be given to the mastery of these skills by all students.

Rationale: According to the National Commission on Excellence in Education, we are a nation at risk. "Our society and its educational institutions seem to have lost sight of the basic purposes of schooling, and of the high expectations and disciplined effort needed to attain them." (p.4). The report goes on to state that secondary school curricula has been diluted to the point that there is no central purpose. "In effect, we have a cafeteria-style curriculum in which the appetizers and desserts can easily be mistaken for the main courses. Students have migrated from vocational and college preparatory programs to 'general track' courses in large numbers. The proportion of students taking a general program of study has increased from 12 percent in 1964 to 42 percent in 1979. The curricular smorgasbord, combined with extensive student choice, explains a great deal about where we find ourselves today. We offer intermediate algebra, but only 31 percent of our recent high school graduates complete it; we offer French I, but only 13 percent complete it; and we offer geography, but only 16 percent complete it. Calculus is available in schools enrolling 60 percent of all students, but only 6 percent of all students complete it." (p. 18).

Reference. A Nation at Risk, The National Commission on Excellence in Education, 1983, Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402.

Michael Apple, in his article "Curriculum in the Year 2000," states that "defining the basics will prove to be one of the most difficult issues that the schools will face" (p.322). Education for a High Technological Economy notes that entrants into the labor force who have not attained the basic skills will find their employment opportunities severely limited (p. 4).

Basic skills are important for our entire society and certainly for each individual. For people to earn a living, to adapt to change, and for the nation to move forward the schools must come to grips with implementing major renovations in basic skills education.

Reference 1. Michael Apple, "Curriculum in the Year 2000," Kappan, Vol. 64, No. 5, January, 1983, pp. 321-327.
Reference 2. Education for a High Technological Economy, 1982 Education Commission of the States, 1860 Lincoln Street, Suite 300, Denver, Colorado, 80295.

Implications for Schools

The National Commission on Excellence in Education report recommends "Five New Basics." At a minimum, all students seeking a secondary diploma be required to take the following: (a) four (4) years of English, (b) three (3) years of mathematics, (c) three (3) years of science, (d) three (3) years of social studies, and (e) one-half (1/2) year of computer science. And for the college-bound, two (2) years of foreign language in high school are strongly recommended.

In their June, 1983 meeting, the National Education Computing Conference cautioned educators about computers. "Schools would do a better job of preparing students for an increasingly technological society if they improved programs in English and basic mathematics instead of increasing instruction in 'computer literacy.'" (Education Week, p. 6). Vico Henriques, President of the Computer and Business Equipment Manufacturers Association, added that the

industry is not seeking computer literacy because that can be developed on the job; but what is being sought is linguistic literacy and math literacy, literacy in structural thoughts, and literacy in problem solving.

The College Board's report on academic competencies listed six areas of competencies: reading, writing, speaking, and listening, mathematics, reasoning, and studying (Education Week, p. 12). Dr. James Greenan from the University of Illinois proposes that the basic generalizable skills are mathematics, communications, interpersonal relations, and reasoning. The Center for Public Resources, in their report on Basic Skills in the U. S. Work Force, suggests that the basic competencies are: Reading, writing, speaking, listening, mathematics, science and reasoning, (p. 9).

There are many different lists and proposals for the basic skills that should be taught in our public secondary schools. Daniels and Karmos, in their report to the Department of Adult, Vocational, and Technical Education for the State of Illinois, summarized current literature on basic skills for the future. In examining this summary, there is a clear commonality to much of the literature: Mathematics and science, reading, writing, reasoning, and problem solving, and being able to cooperate and get along with people to accomplish tasks. At present this list could form an adequate basis for schools to implement a reorganization of basic skills instruction.

Reference. "Schooling in Basics Must Precede Computer Literacy," Education Week, June 15, 1983.
Reference. "Academic Preparation for College: What Students Need to Know and Be Able to Do," Education Week, May 18, 1983.

Policy Proposal:

2. The link between business and industry and education represents a critical feature of the impetus for change in education. In order to maximize

the potential of this link it is recommended that an organization consisting of members of both groups be established to serve as a liaison between business and education, and to serve as a quality control mechanism for changes in instruction.

Rationale: Sidney Marland recently stated that "Strong evidence reveals the willingness and readiness of business and industry to work with the schools. The schools, once reluctant to share responsibilities though to be theirs alone, seem now, in desperation, to be ready to accept partnership. The schools, however, must take the initiative in inviting the partnership and sharing actively in its design and function." (Center for Public Resources, 1982). Presently businesses and schools have disparate views of the adequacy of preparation in basic skills. For example, in a survey conducted by the Center for Public Resources, businesses and unions identified speaking/listening, mathematics, and science skills as most frequently deficient, while educators more frequently identified deficiencies in reading skills.

Businesses are in an accelerated change pattern. For schools to positively reflect these changes, there must be a cooperative feedback mechanism for updating school instruction and for monitoring skill levels, both at job entry and over an extended period in the job experience. Schools need to be cautious that they are not doing a superb job of teaching outdated ideas and skills.

Implications for Schools

In a personal interview with Dr. Susan Raymond from the Center for Public Resources she stated that the odds are 90 to 1 against any substantive outcomes from cooperation between schools and businesses. "Schools and

businesses only talk about getting together--but they never really do it." Substantive cooperation needs to occur so that there is a continuing exchange of information and ideas between schools and businesses for students to be adequately prepared for work on a long and short range basis. A liaison organizatin could insure this exchange.

Reference. Basic Skills in the Work Force, Center for Public Resources, 680 Fifth Ave., New York, NY 10019.

Policy proposal:

3. Adapting with change in the future is the single task that will confront every student. Because of the singularity of this fact, each student should be expected to take and complete a self-managment course that is future oriented.

Rationale: The concept of adulthood as a period of change and development has recently been attracting widespread attention. The problems connected with the unemployed, with the unretrainables, and with the first job worker have been the subjects of numerous popular books and articles. Such terms as "transition," "crisis," "adaption," "coping," and "stress" are widely used. People have become concerned with how they and those with whom they are connected deal with change. As this interest in adult development has mushroomed, it has come to be recognized that the need for self-management does not end with adolescence; that as people move through life they continually experience change and transition. "Research shows that individuals differ in their ability to adapt to change. For instance, job loss may stimulate one person to develop new interests and take up new activities, but may lead another to a dead end marked by inactivity, boredom, and feelings of worthlessness. To one person, a geographical move may

represent a great opportunity, to another it may mean a loss of supoort and identity" (Schlossberg, 1981).

Reference. Nancy Schlossberg, "A Model for Analyzing Human Adaption to Transition," Counseling Psychologist, Vol. 9, No. 2, 1981, p. 2.

If people can be taught to manage their lives better, they will be happier and more adaptable in work and in their personal lives. Presently, there is evidence that self-management skills can be effectively taught so that people lead more productive lives (Coates & Thoresen, 1979).

Implications for Schools

Secondary schools can teach students self-management skills (Brammer & Abrego, 1979). From a review of the literature on coping there is a consensus that such skills are indeed teachable and can help people act realistically and meet changes effectively when they know their nature.

Not only can schools add instruction for self-management, but they can also help answer some of the major questions associated with such instruction. Some of the questions are:

- How can students be assessed to determine the most helpful approach to use in self-management instruction?
- How do people from different cultural backgrounds experience stress and change in a modern industrial setting?
- What is the differential effect of teaching different methods of self-management?
- Which are the most effective methods for different cultural or age groups?

"Adaption to transition and change is a process during which an individual moves from being totally preoccupied with the transition or change to integrating the transition into his or her life" (Schlossberg, 1981, p. 7).

Schools can help students become more adaptable by explicitly instructing them in self-management skills. The methods and content exist. Schools should use them.

Reference. Lawrence Brammer and Philip Abrego, "Intervention Strategies for Coping with Transitions," The Counseling Psychologist, Vol. 9, No. 2, 1980, pp. 19-36).
Reference. Thomas Coates and Carl Thorsen, "Behavioral Self-Control and Educational Practice or Do We Really Need Self-Control?", in Review of Educational Research, David Berliner (Ed.), 1979.

Policy Proposal:

4. Ours is an information society. Microcomputers represent a fundamental component of that society. In order to insure graduates' participation in all facets of that society, every student who graduates from a school that receives DAVTE monies will be able to demonstrate their ability to operate a microcomputer.

Rationale: The necessity for personnel trained in computer-related mathematics and science is evidenced by findings of the National Research Council of the National Science Foundation which target seven major areas for application of new technologies. These areas include medical technology; recombinant DNA methodology; superconductivity and energy storage; nonfossil mineral deposits; space shuttle; and artificial intelligence. The common thread for the future development of these areas is reliance upon the computer as either a tool or a beneficiary of progress (Education Commission of the States, 1982).

Implications for Schools

The decline of mathematics and science skills and the causes contributing to their deterioration may be partially remedied through innovative strategies that incorporate computers into the instructional process. Because computers

have the capacity to reshape traditional education delivery systems and subject matter and because they are being widely incorporated into societal institutions, understanding of their application to all fields is essential. The evidence gathered to date, however, gives no indication that the technological advances made in the past 20 years are being fully realized in education systems.

Reference. Education for a High Technology Economy, Education Commission of the States, 1860 Lincoln Street, Suite 300, Denver, Colorado 80265.

Policy Proposal:

5. Traditional methods of assessing students and work environments have proven to be unsatisfactory. There is little likelihood that the new technologies will fit traditional assessment techniques. Therefore, it is recommended that additional emphasis be given to the functional assessment of skills that are possessed by students and required by work environments.

Rationale: There is a growing body of literature that indicates that traditional methods of student assessment (e.g., I. Q. tests, aptitude tests and interest tests) are unsatisfactory for purposes of education designed for employability. The magnitude of this problem is enhanced when it is realized that these traditional assessment methods are referenced to traditional occupations. With no sure predictions about the characteristics of occupations that will emerge in the technological revolution, it is doubtful that traditional assessment techniques will be of any real value to vocational educators. This critical assessment issue can be resolved, however, if the focus of assessment is placed on the identification and measurement of functional skills. Functional skills are those skills that are necessary for success in any particular occupation, that are basic to a particular

occupation, and are transferable across occupational settings and classifications. Greenan's work for DAVTE represents a stride in this direction.

Implications for Schools

Emphasizing functional assessment will result in at least four advantages for vocational education. First, it will help to specify and operationalize the linkage between school and work. Students will know that what they are learning will have practical value in the world of work. Second, it will encourage business and industry to identify those functional skills that are necessary for success (something that business and industry, by their own admission, has failed to do) and to educate the educational community about those skills. Third, given these two steps, the school-to-work transition that all workers must face will be more manageable. Fourth, the acquisition of functional skills appears to provide students with the greatest likelihood of adapting with the changing technology.

It is our recommendation, therefore, that DAVTE actively promote continued research on the identification and assessment of functional skills (these may also be called employability skills), with a final goal of having all vocational curricula tied to the acquisition and mastery of functional skills.

Policy Proposal:

6. The worker of tomorrow will have to be a problem solver as opposed to a component of a production line. Education would aid students preparation for such a role if it would design curricula for problem solving, decision making, etc. It is proposed, therefore, that an effort be undertaken to investigate

the feasibility of designing a curricula for problem solving, decision making, etc., that would have cross-discipline applicability.

Rationale: General Motors is training approximately 50 percent of its employees in problem-solving skills. Kathy Long, Director of Research and Development for GM, said in a personal interview that the training has been successful, that productivity and positive attitudes have both increased, and that General Motors is going to devote more time and money to problem-solving training. The training has solved job-related problems, improved worker competency, enabled workers to diagnose problems, taught them to examine their own behavior and consequences of it, and has helped workers to be more cooperative with each other in solving problems (Guest, 1979).

Michael Timpane, in his report of corporations and public education emphasizes the need for teaching young people decision-making and problem-solving skills so they will be ready for further education and training (Timpane, 1982). The Center for Public Resources, in its report Basic Skills in the Work United States Force, has identified corporations and also schools which are currently involved in problem-solving training.

Undoubtedly, problem-solving skills will be one of the necessary skills for coping with the expanding technological age. Inertia should not prevent the schools from doing an exemplary job in teaching these skills.

Reference 1. Robert Guest, "Quality of Work Life," Harvard Business Review. Vol. 57, No. 4, 1979, pp. 76-88.
Reference 2. Michael Timpane, Corporations and Public Education in the Cities, 1982, Carnegie Corp. of N.Y., 437 Madison Ave., New York, NY 10022.

Implications for the Schools

In the April, 1983 Kappan, John Goodlad remarked that "teacher talk" was by far the dominant classroom activity. "Teachers rarely encouraged student-to-student dialogue or provided opportunities for students to work

collaboratively in small groups or to plan, set goals, determine alternative ways of achieving these goals, and the like. The emphasis was on recall not on problem solving or inquiry." (p. 552) Goodlad went on to say that each of the 50 states believes in problem-solving instruction but very few are doing much with it.

Present students in general are not good problem solvers. This is partially reflected in the increasing evidence that the levels of mathematical and scientific literacy of American students have declined over the past 20 years. This decline is evidenced by the reduced quantity and quality of mathematics and science training and it is a significant threat to future United States economic and social well-being. The schools must begin a major effort to improve students' problem-solving skills.

The June, 1983 issue of the Kappan lists more than thirty programs for students for learning thinking skills. Included are TV programs, video-taped presentations, computer-assisted instruction, instructional programs for teachers, and actual materials for student use. Edward de Bono authored an article in this Kappan concerning 16 years of his teaching problem-solving skills and describes in some detail his program which is distributed by Pergamon, Inc. The point is that the means do exist for the schools to pass on to students one of the major change skills--the ability to solve problems.

Policy Proposal:

7. Most authorities agree that individuals will change careers several times in their respective lifetime. Because of this trend it is essential that vocational education reduce its emphasis on students' initial employment and emphasize employability across the life span.

Rationale: Mr. Warren Bacon from Inland Steel stated in an interview that a person who starts and ends his career with Inland Steel will most likely have to be retrained at least 5 to 8 times. Donald Frey, Chairman and Chief Executive Officer for Bell & Howell Company, believes that more and more workers will require periodic upgrading of skills. "They'll have to bring to their jobs the temperament to adapt to change, and to accept periodic retraining, to acquire the facility to work with a new generation of technology" (Frey, 1983). Dr. Susan Raymond from the Center for Public Resources estimated that over 30 billion dollars is spent annually in retraining workers. This is too much. Industry cannot remain competitive with foreign countries if this trend continues. The long range adaptability of workers could reverse the trend if schools produce workers who have the skills for change.

Implications for Schools

The nation's public schools are under tremendous attack at this very moment. The National Study on School Excellence uses the term "crisis", John Goodlad's A Study of Schooling uses "backward," and John Naisbitt in Megatrends mentions that we may be in our "darkest hour." If schools must contribute to an efficient work force, provide employees with basic work skills, provide a gradual or steady stream of qualified applicants to universities, and keep pace with schools in countries where we sell or hope to sell goods and services," then this will require secondary school graduates who can transfer their skills and knowledge to many settings and who can handle transitions in job related changes (Goodlad, 1983).

Reference. Donald N. Frey, "ACEO's View of Training", Voc Ed, Vol. 58, No. 4, May 1983, p. 61.
Reference. John Goodlad, "A Study of Schooling: Some Findings and Hypotheses," Kappan, Vol. 64, No. 7, March 1983, pp. 465-71.

Because of the rapid changes in work, people will change careers and jobs more and more as time goes on. For schools to fulfill their responsibilities to our society, they must improve in preparing students for a life of work and not be narrowed by only preparing students for their first jobs.

The short-term to long-term shift will transform the way we look at education and employment. The notion of lifelong learning is already replacing the short-term approach to education whereby one went to school, graduated, and that was that. For the first time on the American scene, many large corporations are considering offering employees lifetime employment. "The long-range perspective may signal the need to return to the ideal of a generalist education. If you specialize too much you may find your specialty becoming obsolete in the long run. As a generalist, committed to lifelong education, you can change with the times" (Naisbitt, 1982, p. 95).

Policy Proposal:

8. Vocational education has typically focused on the "know how" of jobs as opposed to the "know why." Some experts predict that the worker of tomorrow will have to master both the "know how" and the "know why." Therefore it is important that efforts be undertaken to integrate vocational education courses with appropriate academic courses.

Rationale: Education in Illinois, indeed in the entire United States, appears to be dichotomized. The dichotomy occurs along the lines of "know how" and "know why." The "know how" side of education has emphasized the practical, hands-on aspects of schooling. The "know why" position has focused on the theoretical understanding of machines, events and so on. Over the years

vocational education has been associated with "know how," while academic education has emphasized "know why." While dichotimization may have been helpful at a particular time in our history, it is currently a dysfunctional separation.

The purpose for its dysfunction is it prevents students, both individually and collectively, from being successful competitors in the global job market. As reported in A Nation at Risk, "the world is indeed one global village. We live among determined, well educated and strongly motivated competitors." The authors of that report go on to state that "knowledge, learning information and skilled intelligence are the new raw materials of international commerce." The continued artificial dichotomization of education can only contribute to our inability to compete successfully in the global market.

Implications for Schools

It is our proposal, therefore, that efforts be initiated at the state level to develop curricula that synthesize both the "know how" and the "know why" of education. Furthermore, insofar as possible, we recommend that such curricula be developed by teams of academic and vocational educators and be designed to be team taught by comparable teams in local educational agencies.

Reference. A Nation at Risk: the imperative for educational reform, Chronicle of Higher Education, XXVI(10), 1983.

Policy Proposal:

9. Education must establish its long-term goals and use short-term goals as the means to achieve those long-term goals.

Rationale: In the recent best seller Megatrends, John Naisbitt stated that there is a shift in emphasis relative to goal setting. That shift centers on

the emergence of long-term goals as important factors in the operation of a facility. We believe that the trend is applicable to education. That is, educational policy planners must begin to identify the long-term goals of their respective institutions. One way to do that is to apply "The Law of the Situation." "The Law of the Situation" asks, "What business are we as educators really in?"

Based on the report of the Education for Employment Policy Study, the Illinois State Board of Education is in the business of Employability Education. Closer examination of that report and its recommendations, however, reveals that Employability Education appears to be limited to students' initial post-high school employment. While the goal of Employability Education is exemplary in its intent, the limitation of initial employment ignores the fact that high school graduates will need to exercise their Employability Education several times during their lifetime. Stated differently, if Employability Education is the purpose of education in Illinois, then it needs to be considered as a long-term goal as well as a short-term goal. To do otherwise is to ignore the reality of labor market statistics.

Implications for Schools

It is our proposal, therefore, that the goals of the DAVTE be based on the long-term objectives of the Illinois State Board of Education and that these goals reflect, insofar as possible, the realities of both current and predicted labor markets. Furthermore, we propose that the DAVTE require all recipients of fiscal funds to explicate their long-term objectives and to show how short-term goals are related to the potential achievement of long-term goals.

Reference. Naisbitt. J., Megatrends, New York, Warner Books, 1982.
Education for Development Policy Study, Part II, A Report and Recommendations, June, 1983.

Policy Proposal:

10. The last two decades have evidenced an increase in the emphasis given to students' self-esteem and that, in part, students' perception of his/her own competence enhances that self-esteem. Recent evidence suggests that competence is the more important issue in the work place. Therefore, it is suggested that additional emphasis be given to the acquisition of specific competencies.

Rationale: In the establishment of their Quality of Work Life Program, General Motors has discovered that employees prefer belonging to groups that emphasize the competency of the group members as opposed to groups that focus on members' personal problems. Competency is defined as making a significant contribution to the completion of a particular task. A significant contribution is any effort that would be missed if it were not present. In short, workers (at least the ones in the GM groups) value their personal competency. As documented by John Goodlad, in his book "A Study of Schooling," schools appear to be unable to promote students sense of competence. Instead of emphasizing competence, schools, particularly in the last two decades, have emphasized self-awareness and self-expression. While such techniques were adopted and used with the most positive intentions in mind, they failed to reflect the reality that self-concept, including self-esteem and self-competence, are experienced by individuals participation in social environments, particularly the world of work.

The writers of "A Nation at Risk" approached this issue in terms of excellence. They contend that the lack of committment to excellence represents a major threat to our future as a nation (or in our case, a state). They go on to define what excellence means for an individual learner, a school, and a society. Those definitions follow.

For the individual learner, excellence means performing on the boundary of individual ability in ways that test and push back personal limits in school and in the workplace.

Excellence characterizes a school or college that sets high expectations and goals for all learners, then tries in every way possible to help students reach them.

Excellence characterizes a society that has adopted these policies, for it will then be prepared through the education and skill of its people to respond to the challenges of a rapidly changing world.

Implications for Schools

At the heart of such a society is the committment to a set of values and to a system of education that affords all members the opportunity to stretch their minds to full capacity, from early childhood through adulthood, learning more as the world itself changes. Such a society has as a basic foundation the idea that education is important not only because of what it contributes to one's career goals, but also because of the value it adds to the general quality of one's life.

Helping students achieve a personal sense of competency and the quest for excellence go hand in hand. One cannot be achieved without spending an equal amount of effort on the other. If schools are to prepare competent workers, schools must purposefully strive for excellence. It is our proposal (1) that

each school district be expected to define excellence in vocational education, (2) that they operationalize that definition, and (3) that they institute measures to achieve their particular definition.

Policy Proposal:

11. One of the fears that accompanies technological advances is that both the schools and the work world will become dehumanized. To counterbalance this tendency, it is recommended that increased emphasis be given to aesthetics.

Rationale: The present emphasis on technology must be balanced in the schools by the maintenance of a humanistic education. John Naisbitt, in Megatrends, 1982, referred to this balance as "high tech/high touch." "Now, at the dawn of the 21st century, high tech/high touch has truly come of age. Technology and our human potential are the two great challenges and adventures facing human-kind today. The great lesson we must learn from the principle of high tech/high touch is a modern version of the ancient Greek ideal--balance. We must learn to balance the material wonders of technology with the spiritual demands of our human nature" (Naisbitt, 1982). The Paideia Proposal recommends discussion of works of art and literature as well as involvement in artistic activities such as music, drama, and visual arts as essential components of the curriculum. Erik Fromm (1968) believed that aesthetic involvement emphasized creation rather than destruction, and most endeavors are worthwhile that deemphasize destruction and provide moments of absorbing involvement.

Reference. John Naisbitt, Megatrends, Warner Books, Inc., New York, p. 40.
Reference. Fromm, E. The Heart of Man, Harper and Row, New York, p. 33.

Implications for Schools

Contemporary patterns of life are conditioned by values of society of which people are often scarcely conscious. Through aesthetic experiences with drama, dance, sculpture, poetry, books, painting, etc., the values and trends of society can be portrayed for the student and by the student. Students can become consciously aware of these values and trends through involvement in the art forms used to portray them. These values will be the foundation from which the student as an adult will choose to preserve certain aspects of our culture while transforming others.

Aesthetic involvement also permits an expression of oneself and it can help satisfy the need to be oneself. To succeed in expressing oneself is to experience oneself. Aesthetic involvements in our schools are for the students' welfare in satisfying his or her own spiritual needs.

Participating involvement in dance, drama, music, literature, or painting can reveal how it feels to be completely and deeply involved in a task. This can result in self-forgetfulness and other-forgetfulness, less inhibition, less need for defense, less need for artificiality, and less fear of ridicule, humiliation, or failure. Only then can students be truly in touch with themselves.

Policy Proposal:

12. Career decision making is one of the primary tasks confronting the adolescents and young adults. In order to maximize the outcome of this process, it is recommended that career guidance personnel, school administrators and parents work together to plan and implement programs which would accomplish this task.

Rationale: In a report by Rehberg & Hotchkiss (1979) it was suggested that current efforts to prepare adolescents in the career decision making process are largely ineffectual and that the role of career guidance counselors at present does not exert enough influence upon the adolescents to insure the involvement necessary to promote career decision making skills in the adolescent.

The High School and Beyond Study (1980) reported that high school seniors believe that parents, peers and teachers ranked above guidance personnel in their influence upon adolescents' career plans. Therefore, if educators are serious about the intentions of influencing adolescents career decision making behavior, it is suggested that their efforts might best be channeled through those parties deemed influential by adolescents themselves, namely, parents and peers.

Reference. High School and Beyond, (1980), Unpublished manuscript, Illinois State Board of Education, Springifeld, Illinois.
Rehberg, R. & Hotchkiss, L., (1979), Career Counseling in Contemporary U.S. High Schools. In D. Berliner (Ed.), Review of Research in Education, (Vol. 7), Washington, D.C.: American Educational Research Association.

Implications for Schools

Despite the vital role that parents play in youths' career decision making, very few programs have been developed to assist them in that task.

It is imperative that schools become involved in designing, implementing and providing programs that would promote parent participation in the vital process of aiding adolescents' career decision making. Evidence suggests that career guidance counselors would enhance their ability to influence adolescents' career decision making if they would collaborate with parents on this important task. If the potential that exists in the marriage of parents and counselors is to be realized, counselors a) would need to redefine their role within the school and function as adult educators and b) would need to

solicit the encouragement, endorsement and cooperation of educational administrators. A liaison between all these elements would certainly enhance and maximize the adolescents' career decision making skills which would, in turn, assist in adequately preparing students in the ability to view careers on a long and short-term basis.

Conclusion

As stated previously by the National Commission on Excellence in Education (1983), "Our society and our educational institutions seem to have lost sight of the basic purpose of schooling and the high expectations and disciplined effort needed to attain them." It has been our purpose to address the issues and considerations that confront vocational education in light of this claim.

It is now commonly accepted that what happens in the marketplace (for both employers as well as for employees) is significantly determined by the preparation and training for employment that people receive before they enter the workforce. Despite this awareness a growing body of evidence indicates that an incredibly large number of people are ill-prepared to contribute to the overall productivity of the marketplace. Some 23 million American adults are functionally illiterate, American students never place first or second in international comparisons of student achievement, business spends over 30 billion dollars annually on training/retraining workers who have inadequate basic skills, military leaders spend millions of dollars on costly remedial education for a population where one quarter of the recruits cannot read above a minimum ninth grade level, and nearly 40 percent of our 17-year-olds cannot draw inferences from written material.

Knowledge, learning and information are the "new raw materials" of international commerce. The emphasis given to the production of these "new raw materials" is spreading throughout the world and is shrinking the small competitive edge that the United States has typically held in the world market. Because of its inattention to the basic purposes of schooling, the United States' once unchallenged position of preeminence in commerce, industry, science and technological innovation is being overtaken by competitors throughout the world.

The impetus for change that will remedy this situation is certainly preeminent in the minds of educators and curriculum decision makers alike. Each change, however, has attendant costs which may prohibit the implementation of change. While it is important to consider potential costs that will accompany change, it is equally important to estimate existing costs (i.e. those that result from not changing) and then to determine which cost is greater.

It is obvious from the evidence cited above that the cost of not considering making changes in the education of our youth is not merely limited to the individual who makes up our society, but to our society as a whole and ultimately to our position in the global marketplace. It is our position that we have already paid the price for our inattention to the long-range educational needs of our society, and that the cost is too high. Failure to amend such practices, however, will result in a debt of such magnitude that the projected fiscal debt of the U.S. will seem miniscule in comparison.

The policy proposals suggested herein will heighten the likelihood that students will be prepared to both assume and retain a place in the American workplace after completion of their formal schooling. The proposals are a

beginning, a way of addressing the needs of both educators and those who will be educated. Finally, the proposals serve to refocus attention on the basic purposes of schooling, ensuring that each person "by virtue of their own efforts, competently guided, attain the mature and informed judgement needed to secure gainful employment, and to manage their own lives, thereby serving not only their own needs but also the progress of society itself" (National Commission on Excellence in Education, 1983, p. 4).

PARENTS AND PEERS:
THEIR IMPORTANCE IN
THE CAREER DECISION
MAKING PROCESS

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ILLINOIS
STATE BOARD OF
EDUCATION

Department of
Adult, Vocational
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Education

ABSTRACT

This paper examines the role played by parents in their children's career decision making process. Parents are identified as preeminent influences of adolescents' career decision making, a fact that has been largely unrecognized by career guidance personnel and school administrators as evidenced by the lack of programs designed to enable parents to promote their children's career decision making. Programmatic alternatives that may be used by counselors to modify this situation are identified, as are guidelines for what parents can do to maximize the potential of their influence. Recommendations for career guidance personnel and administrators are also provided.

Career decision making is one of the certainties of life. Everybody makes career decisions. While the actual decisions may vary from person-to-person, the decisions that are made shape not only that individual's career, but that person's identity as well. The importance of choosing a career has been well documented. One of the most well known authorities, Erik Erikson (1953), contends that selecting a career is the primary task that confronts adolescents and young adults. Making career choices, according to Erikson, leads to the formation of one's identity. Those who do not respond to the challenge of selecting a career foreclose on their opportunity to achieve an identity that is uniquely their own (Marcia, 1980).

Both the certainty and importance of career decision making for adolescents makes it imperative to consider how best to prepare people in this age group to make those decisions. Numerous solutions to this dilemma have been proposed by a variety of theorists. Two elements seem common to most of the proposed solutions. First, they are meant to be conducted within the context of an educational setting, usually by school counselors or vocational educators. Second, as reported by Rehberg and Hotchkiss (1979), such efforts are largely ineffectual. Additional evidence of the ineffectiveness of these efforts can be inferred from the High School and Beyond Study (1980), which reported high school seniors' beliefs about who influenced their career plans. Guidance personnel ranked below parents, peers, and teachers and above college and military recruiters. Other research (Brookover, Erikson, & Joiner, 1967; Coleman, 1961; Hamachak, 1971) substantiates the contention that both parents and peers have a significant influence over the decision making process of adolescents which, in turn, effects their career decision making.

If educators are serious about their intentions of influencing adolescents' career decision making behavior, the evidence cited above suggests that their efforts might best be channeled through those parties deemed influential by adolescents themselves, namely, parents and peers. For whatever reason, however, efforts of that kind are rare. Because of the paucity of such programs, it is critically important that methods which parents and/or peers can use to assist adolescents' career decision making be identified.

The purposes of this report are four: First, to provide a brief review of the character of parental and/or peer influence on adolescents' career decision making; second, to identify four types of efforts that may be used by parents to influence adolescents' career decision making; third, to identify guidelines which may be utilized by parents to enhance adolescents' career decision making; and finally, to list recommendations for guidance personnel who wish to work with parents on this critical issue. These four purposes may better be stated as questions: 1. Why are parents and peers influential?, 2. How can parents be more effective in assisting the career decision making process?, 3. What types of programs are currently available?, 4. How can guidance personnel be more effective?

1. Why are Parents and Peers Influential?

Parental influence on their offspring's career decision making has been widely recognized. Beginning more than a half-century ago, sociologists began to theorize about occupational choice (e.g., career decision making) based upon status dimensions (e.g., power, prestige, income) of occupations (Rehberg & Hotchkiss, 1979). This theoretical orientation was translated into analysis of parent-to-child (typically father-to-son) occupational mobility tables. As

indicated by Rehberg & Hotchkiss (1979), this research did not emphsize study of occupational choice. It did, however, help to identify the importance of social factors such as parental status in the formation of occupational choice.

Since that beginning, the study of parental influence expanded to include variables such as parents' education, socio-economic status, and educational and occupational expectations. Blau & Duncan (1967), for example, found that subjects' occupational status was influenced by both the educational level and the occupation of the fathers. They also found that subjects' education level was influenced by the education level and occupation of their fathers. A weakness of this line of research, was that it was limited to males. The results do suggest, however, that the combination of both father's occupation and education contributed substantially to the social milieu that influences a son's occupational choice.

In an attempt to further explain the relationship between parental status and occupational attainment, Sewell and his associates (Sewell, Haller, & Poctes, 1969; Sewell, Haller & Ohlendorf, 1970) expanded the Blau & Duncan model to include social psychological variables. The variables they added included: 1) student occupational-status expectation in high school, 2) student educational expectation in high school, 3) significant others, and 4) educational attainment. Sewell and his associates assumed that occupational attainment would be influenced by student occupational-status expectation and educational achievement, both of which are influenced by student educational expectation. Both student educational and occupational expectation were thought to be influenced by the student's significant other group, which, in turn, was influenced by parental status. Stated differently, Sewell and his

associates hypothesized that "parental status influences the significant others with whom youth associates; significant others influence youths' educational and occupational expectations, and career expectations affect achievements" (Rehberg & Hotchkiss, 1979, p. 123).

Independent investigations of the model proposed by Sewell and his associates have supported their assumptions concerning the influence of significant others on career expectations and occupational attainment.

It may be assumed, therefore, that the significant others in an adolescent's life, including his/her peer group, play an important role in the transmission of parental status, and thereby, influence the youth's career decisions. It is important to note, however, that this assumption necessitates a special definition of peer group. In this instance, an adolescent's peer group refers to that part of the family's social milieu in which the adolescent's understanding of the family's values and beliefs about issues related to education and occupation can be examined, evaluated, and acted upon (either through affirmation or negation of the family's values) by the adolescent. It is important to recognize, in this instance, that one's peer group is a function of one's family. The peer group does not exist independently of the family. Because the social milieu of the family establishes the limits of peer group influence, we will limit our remarks in the remainder of this presentation to the role that the parents play in their children's decision making.

2. How Can Parents be More Effective?

Recognition of the fact that parents play an extremely vital role in youth's career decision making is an important first step toward helping parents utilize their influence. It is equally important to recognize,

however, that adolescence and young adulthood are crucial times in youths' lives. It is a time when youths are involved in the twin processes of differentiating themselves from their families and forming their own identities. Differentiation refers to the process of gaining one's personal autonomy and an identity independent of their parents (Marcia, 1980) while retaining membership in their families. At the heart of the differentiation process is the examination, evaluation, and modification of family values, beliefs, and behaviors on the part of the adolescent. As suggested previously, peer group interaction plays a critical role in the overall process.

The process of differentiation is both difficult and complex. It is difficult in that youth become less dependent on their family to satisfy their emotional, physical and economic needs. This lessening of dependence typically results in the modification of established family communication patterns and the requisite acquisition of new behavior on the part of both the parents and the youth. As may be expected, along with the acquisition of new behavior arises for both the parent and the youth a period of awkwardness. The process is complex because at the same time that youths are trying to differentiate from their parents, they remain dependent upon their parents for support in certain critical areas. Career planning is one of those areas.

According to James Marcia (1980), parents and youth respond differently to the differentiation process. As stated previously in this paper, the outcome of the differentiation process for youth is the formation of an identity. Marcia (1980) has identified four distinct identity statuses: identity achievement, forclosures, identity diffusion, and moratorium. These four statuses are thought to differ along two criterion: the presence or

absence of a decision-making period and the extent of personal investment in two areas: As defined by Marcia (1980),

> Identity Achievements are individuals who have experienced a decision-making period and are pursuing self-chosen occupation and ideological goals. Foreclosures are persons who are also committed to occupational and ideological positions, but these have been parentally chosen rather than self-chosen. They show little or no evidence of "crisis." Identity Diffusions are young people who have no set occupational or ideological direction, regardless of whether or not they may have experienced a decision-making period. Moratoriums are individuals who are currently struggling with occupational and/or ideological issues; they are in identity crisis.

According to Marcia, parental involvement in the differentiation process contributes to the outcome of adolescents' identity formation. In the case of Identity Achievements, adolescents have a balanced view of their parents and their parent's life style. Parent-child communication is characterized by positive though moderately ambivalent relationships. Foreclosures, on the other hand, experience both pressure and support for conformity to the family values. With this identity type parents (especially fathers) tend to dominate their children and emotional expression is discouraged. In contrast to both Identity Achievements and Foreclosures, Identity Diffusions have negative parent-child interaction patterns. This pattern is characterized by the Identity Diffusion's feeling of rejection and detachment from parents. Finally, Moratoriums are described as having ambivalent relationships with parents. But more importantly, Moratoriums see parents as dissapointed in them.

In short, the differentiation process appears to magnify the importance of the characteristics of the relationship between parent and adolescents. Those characteristics, in turn, influence subsequent adolescents' responses to career decision making tasks and the formation of their respective identities. Ideally, it is not enough that parents simply be availble to their children during this process but that they also be prepared to utilize their status power to promote the development of their children.

Acknowledging the importance of parental participation in youths' career decision making, and recognizing that its importance is rooted in parent's executive status (e.g., leadership role) within the family, a fundamental question is raised: How may parents utilize their status power to promote the continual development of their children? Research evidence cited above (e.g., Marcia, 1980) suggests that when left to their own resources, some parents are successful in their efforts to promote growth while others are not. That is not to say, however, that some parents are not interested in helping their children develop. Rather, the research findings suggest that some parents are ill prepared to help their children address the issues associated with career decision making. As stated by Thomas Gordon (1970), parenting is the most difficult job in the world, and is one for which very few people are adequately trained.

What steps, then, can parents take to enhance their contribution to their child's development, especially in the area of career decision making? The answer is two-fold. The first part emphasizes guidelines for parents to utilize themselves, and the second part emphasizes what career guidance personnel can do to assist parents. While it is important to recognize that these two parts are not mutually exclusive, for purposes of this presentation

we will treat them as such. Therefore, guidelines for parents will be delineated first, and then guidelines for career guidance personnel, second.

Lee Knefelkamp (1982), an authority in adolescent and adult development, has stated that the most important form of power is the power to empower others. Such a statement is very applicable to the role that parents can play in their offspring's career decision making. Parents may wish to act in ways that will empower their children, but as stated previously, the parents task is a difficult one. They need to be available to their offspring, but they must also be willing to distance themselves from the decisions their children must make. Being both available and distanced at the same time is difficult in the easiest circumstances. To ask parents and children to manage this feat during adolescence is to make a difficult request indeed.

As stated before in this paper, little has been done to help parents complete this difficult task. Those efforts that have been attempted have consisted of lists of suggestions for parents. Two examples of those lists can be found in the Appendices I and II of this paper. Examination of those lists reveals two types of advice for parents. One type focuses on action that parents may wish to take. Examples include listen, accept, participate, encourage, communicate, support and share. The other type of advice suggests ways for parents to be. Examples include be aware, be careful, be active and be supportive. Taken together these two types of advice provide a foundation for parental action.

Development flourishes in an environment which is characterized by appropriate levels of challenges and supports (Sanford, 1966). Parents can help create such an environment if they will listen to their adolescents, if they will respond to them in a sincere and caring manner, and if they will challenge them to continue to grow.

3. What Kinds of Programs are Available?

Despite the vital role that parents play in youth's career decision making, very few programs have been developed to assist them in that task. Career nights seem to be the most popular form of assistance provided to parents. An example of such a program is described below.

Program 1: Project Big.

Project Bit is a district-wide career night held alternately at one of the Maine Township High Schools in the spring of the year. Project Big began in 1970 and has grown considerably over the past years. In 1975, approximately 3,500 students and parents talked with representatives of nearly 200 different career areas at Project Big. Exact attendance figures are difficult to determine--in the past the number of programs distributed were used to approximate attendance.

In order to encourage and stimulate community and industrial support within the district, the Career Education Advisory Council was developed. The Council was originally organized as a small group of local business people and cooperative education coordinators who would occasionally meet to discuss their common interest in students who work part-time while going to school part-time. The Council has expanded and now holds regularly scheduled meetings at the district administration building. Career counselors play an important role in the function of the organization. When coordinating a program like Project Big, it is important to establish a close working relationship with the committee which is responsible for determining which careers should be represented. For the first program of this type the career interest survey sponsored by the Explorer Scout Program could be used to determine career interest areas of the students. With the information

obtained by surveying all junior class memebers, the Explorer Scouts classify the interests of individuals into fifteen job clusters of the U.S. Department of Labor. The Explorers then provide each school with a computer printout of collective and individual career interests. This information provides a valuable tool for the counselor in developing a career program.

Contacting and confirming the list of participants and representatives of various careers is probably the most important and time consuming task of all. Identification cards must be prepared for participating companies as well as identification tags for each representative. A program booklet is provided for visitors as they arrive. This program includes the names of the representatives and the names of the companies for which the representatives work.

Project Big is widely publicized in each of the four high schools as well as the entire community. Publicity includes articles in the school newspapaers, local and Chicago area newspapers, radio and TV spot announcements, and personal appearances by Career Counselors at luncheon meetings of various organizations. Posters are placed in windows of businesses and on the bulletin boards of classrooms; and letters are sent to all parents from the Superintendent of Schools.

Financing Project Big is accomplished by funds received from various service organizations, businesses and industries in the community. In addition to requests for financial assistance, these agencies are asked to volunteer their time and talent in representing careers.

While such events as Project Big are popular, the actual value of programs such as this for parents has never been empirically documented. It is questionable whether a single event can be of significant value to a

process that occurs typically over a number of years. While students must make decisions about what to do after graduation from high school, parents need to become involved in that decision making process long before youth are required to make that decision based upon socially imposed deadlines (i.e., the completion of twelve years of schooling). The three program descriptions that follow are identified because they focus on the ongoing nature of the career planning process.

Program 2: Parents as Consultants in Their Child's Career Decision Making.

This program was designed by a group of career counselors at Southern Illinois University at Carbondale (Daniels, Roberts, May, Stockwell, & Costello, 1980). The purposes of the program are to:

a. provide parents with up-to-date information about the process of selecting an occupation,
b. teach parents basic consulting skills that they can utilize with their children,
c. receive feedback and support for their attempts to utilize the consultation model.

The program is designed to be conducted as a workshop consisting of a minimum of two ninety minute sessions. Additional sessions may be added at the discretion of the workshop members. Each workshop is conducted as a small-group discussion with time set aside for both didactic and experiential activities. A series of learning modules developed for use in the program are based on the Harden's Career Decision making model. Each module contains specific objectives, activities, and discussion questions that may be used by the workshop leader to guide and fascilitate the group process. Because each module addresses a particular issue, the modules may be arranged in the manner that is most likely to meet the needs of any particular group.

Program 3: Self-Directed Career Center (SDCC).

The Self-Directed Career Center was developed by Andrew Michlelich and David Belsham at Joliet Junior College in collaboration with the Will-Grundy CETA Consortium. The SDCC is a configuration of posters which outline the career development process in a flow chart scheme. Five stages in the career development process are identified: self-awareness, career exploration, decision making, education and training and job search. There is one poster for each state. Each of the posters represents a series of questions that a client may ask. Each question, in turn, is keyed to an information handout that identifies useful activities. The activities are designed to aid the client in responding to the questions related to their career development.

Although the project was not designed to be used with parents, both the organization and its content suggest its potential utility with that target group. Its utility arises from three factors. First, the program presents career decision making as a process, thus it will have utility across a period of time. Second, the program is keyed to questions that have to be answered, which leaves the responsibility for actual decisions with the student. Third, and perhaps the most important, the program is self-directed. It is a program that can fit the needs of many different decision makers.

Each of these factors is important because they reflect the "real world" of adolescent career decision making, especially as seen from the eyes of parents. That is, choosing a career is not a singular event in the life of the adolescent. It is a process that occurs over time. It is a process that involves the differentiation and integration of numerous pieces of information about oneself, the world of work, and so on. This process is advanced by

answering questions that are identified as individually important while the pace of advancement through the process is different for each individual.

It is suggested here that these materials could be modified and given to parents for their information and use. The actual modifications would be minor and may involve only changes in the wording of some of the questions. The information could be provided to parents in one of two ways: by conducting workshops that would teach parents how to use the materials, or by putting together a brochure that contains the key elements of the program and distributing the brochure to parents. With either technique parents would have a valuable resource at their disposal.

Program 4: Individual School and Career Program (ISCP).

The ISCP was developed by the couseling staff at Rich South High School to provide each student with a personal educational and vocational plan. Compiled in a handbook entitled Horizon, the ISCP is utilized by counselors and students to enhance students' career decision making process and improve their course selections during high school. Information contained in the booklet includes:

1. Individual Written Four-Year Plan
2. Course Offerings
3. Description of Special Needs Programs
4. Personal Interest Inventory
5. Vocational Interest Inventory
6. Information Concerning Optional Testing Program
7. Career Awareness Information Activities
8. Career Planning Information Activity

The table of contents indicates that the handbook is divided into four sections: Direction, Exploration, Preparation-High School, and Preparation-Post High School. Each of the sections contains three or more topical headings. The Direction section, for example, includes such topics as

curriculum, registration, testing, grading system, and graduation. Values, interests, abilities, and skills fall into the Exploration section. Topics like cooperative vocational educational programs, vocational sequential courses, academic sequential courses and the Sauk Area Career Center are found in the Preparation-High School section. Preparation-Post High School addresses such topics as, on-the-job training, apprenticeships, the military, community colleges, and four-year colleges and universities.

In all, Horizon, represents a relatively thorough source of information for career planners. While it was not designed to be given to parents for their use when helping their children with their career decisions, most parents would probably find it to be a valuable resource. It only has to be made available for parental use.

The four programs identified above represent four different methods for helping parents to influence their offspring's decision making process. While each program has its unique advantage, it may be impractical to rely on any single program alone. If we are to capitalize on the influential power of parents/peers, we must be prepared not only to utilize and integrate existing techniques but also to create new ones.

4. How Can Career Guidance Personnel be More Effective?

A recent review of career counseling in high schools (Rehberg & Hotchkiss, 1979) identified four factors that limit guidance counselors capacity to influence high school students career decisions. Those factors were:

1. An inability to identify how the school is linked to the world of work.
2. An inability to identify and desribe the nature of the school-to-work transition.
3. The lack of accurate knowledge of local labor market statistics.
4. The inability to provide both the quality and quantity of time all students require when making career decisions.

Two conclusions may be inferred from these findings. First, that career counselors are currently unprepared and unable to address any of these four factors. Second, that if students are to receive the full measure of assistance necessary to make career choices, each of these factors must be addressed. These facts, in turn, raise an important question: What can counselors do to effect a turn about of these four issues?

Our answer to that question is clear. It is our position that career counselors will be more influential in their attempts to assist adolescents address career decisions if they will collaborate with the parents of adolescents in addition to working with adolescents alone. Simply stated, we contend that parents are in a better position to address the unmet needs of adolescents than are guidance counselors, and that parents efforts may effectively be facilitated by their active involvement with career guidance personnel.

The rationale for our position is based on three facts. First, as previously discussed in this paper, parents already play an influential role in their childrens' career decision making. Second, to either a greater or lesser degreee, parents have completed two of the four tasks listed by Rehberg and Hotchkiss. That is, they have linked school to the world of work, and they have experienced the school-to-work transition. Third, parents more than any other person in the student's social milieu, are in the position to provide student's with the quality and quantity of time they need in order to make career decisions. By working with parents and capitilizing on the power and influence they have, career guidance counselors will be better able to assist adolescents make career decisions.

It should be noted, however, that the adoption of such a plan will necessitate change on the part of the career guidance counselor as well as the school administrators. Career guidance personnel will need to make at least two major changes. First, they will have to find ways to meet with the parents and insure involvement in such a program. This step will require that counselors establish communication channels with parents and convince them of their importance in the career decision making process. Second, counselors will have to function as adult educators, working with programs that will attract and involve parents. At a minimum, these programs will have to be a collaborative effort that will maximize the expertise and influence of both the parents and the counselors.

Administrators will need to make parallel changes. They will need to encourage counselors' involvement with parents and recognize that such involvement will have long-term benefits for the school, the parents and the students. It will also be important that administrators allow guidance personnel the time flexibility to operate such a program. Without these two minimal steps of support from the administrators, such a program will encounter difficulty getting off the ground.

Summary

This report has focused on the role of parents in the career decision making of their offspring. Several salient issues were identified in this report. First, parents do play an influential role in their offspring's career decision making. Moreover, the influence is both direct and indirect. It is direct in that parents shape the social milieu in which children grow up. Parental influence is indirect in that the social milieu contains significant others which influence the individual's educational and occupational

expectations, which, in turn, influence their career choice. Second, adolescents differentiation from their family of origin and the attainment of their own identity is influenced by the relationship between adolescents and their parents. Parents are in the preeminent position to influence their children's career decision making. For a variety of reasons however, parents have not been directly involved in their children's career decision making. Third, the schools contribute to parental non-involvement by not providing programs that promote their participation in that vital process. It was also noted that such programs can be designed and implemented. Finally, guidance counselors could enhance their ability to influence adolescents career decision making if they would design and implement programs that would enable them to collaborate with parents on this important task. Such a change would necessitate changes in both the role description and function of the guidance counselors.

The conclusions of this report are clear. Parents represent a virtually untapped resource that career guidance personnel can utilize to facilitate adolescent's career decision making. If career guidance personnel are to utilize this valuable resource, they must begin to redefine their role within the school and begin to do more work with parents, functioning as adult educators. Finally, if the potential that exists in the marriage of parents and counselors is to be realized, educational administrators must encourage, endorse, and reward such practices. Without administrative cooperation, such efforts would be futile. The ingredients for success are available. We suggest it is time to begin.

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APPENDICES

APPENDIX I

1. Listen to your child's expression of dreams about who he/she wants to become.

2. Accept your child as a growing person, regardless of his/her strengths and weaknesses.

3. Take the time to participate in fantasy games in which child acts out jobs.

4. Relate to jobs and things a child likes to do, even if you have no experience in those fields.

5. Supply your child with books, magazines, and games from which interests, capacities, values and job skills can be experienced and learned about.

6. Serve as a career model and introduce your child to other vocations outside your field of work.

7. Permit your child to try out work experiences, even though you may not like the work yourself.

8. Find and use job information resources in helping your child learn more about specific occupations.

9. Support the school's efforts in career education.

10. Permit your children to explore interests in nontraditional occupations regardless of sex or social or economic background.

APPENDIX II

1. Encourage your child to explore areas of self interest to him/her.

2. Endeavor to keep channels of communication open and in use.

3. Help your child to recognize both his assets and limitations in a way which leads to healthy self-acceptance and self-affirmation.

4. Operate from a realistic appraisal of who your child is as opposed to operations from a base of wishes, dreams, and even fantasies.

5. Enable your child to gain firsthand knowledge of occupational possibilities.

6. Help to examine the pro's, con's and other factors relevant to particular occupations.

7. Encourage the use of criteria other than status and salary basis for occupational selection.

8. Plan personal visits to colleges or training facilities.

9. Be aware of not substituting your own aspirations for your child's aspirations.

10. Be careful not to push your child past his/her real capacities.

11. Be as quick to praise where praise is warrented as you are quick to criticize negatively.

12. Allow your child to make an increasing number of independent decisions.

13. Help your son or daughter to realize that none of us is really free to succeed until we are free to make mistakes, and that mistakes need not be dead-ends, but detours.

14. Get information about the school's guidance program and services.

15. Encourage your child to be in touch with the school's guidance program and services.

16. Be aware that occupational and psychological test results are only part of the story about who your child is, and that one person cannot be totally reflected in a test score.

17. Be aware that grades (marks) in school also may not be a comprehensively accurate reflection of your child's capacities.

18. Recognize that not everyone ought to go to college.

19. Try to avoid insistence on your child's becoming a "professional person" as opposed to other occupations.

20. Live the life of joyous affirmation through daily involvement and thereby providing your child with an honest expression of what it means to say "yes!" to life.

ANNOTATIONS

SOURCE: Global Stakes: The Future of High Technology in America by James Botkin, Dan Kimancescu, and Ray Statu. Ballinger Publishing Co., Cambridge, Mass., 1982.

ANNOTATION: The book asserts that the growth and vitality of a dynamic industry--computers, electronics, and communications--are threatened by a shortage of brainpower. This has arisen because America's leadership has failed to recognize the shift from a catital-intensive economy that downplays education to a knowledge-intensive economy that requires educated and trained human resources.

What Students Need

- arithmetic
- reading
- writing
- computer literacy
- quantitative skills
- general knowledge of scientific principles
- communication skills
- humanistic values
- leadership skills

Note (from p. 143): "The type of education in the coming decades should remove the limits to learning imposed by educational policies that are either too vocationally narrow or too theoretically abstract. This will require balancing the goals of employment and enlightenment, and integrating humanities with technological education. To do so will require a reorientation of both technical and liberal arts education."

SOURCE: Timpane, Paul. Corporations and Public Education in the Cities, 1982. Carnegie Corporation of New York, 437 Madison Ave., New York, NY 10022

ANNOTATION: The objectives of this study are two: (1) to help develop a greater understanding of the nature of the corporate interest in education in the great cities, which might explain the emerging patterns of activity; and (2) to suggest steps that the public and private agencies could take to encourage and improve future corporate activities that would strengthen and support the cities' schools.

Skills for Functional Literacy

- math
- science
- reading
- organizational skills
- communication skills
- managerial skills
- personal relations skills
- problem solving skills
- flexibility

Note (from pp. 22-23): "For an important slice of American industry centering in the high technology area but including parts of many industrial and commercial activities, preparation in science and mathematics constitutes a special objective above and beyond basic skills. These businesses have especially high technical requirements for employment. They see themselves on the cutting edge of productivity advances, worry about foreign competition, and believe that the Japanese and others are preparing better technical workers in their schools."

SOURCE: Basic Skills in the U.S. Work Force. Center for Public Resources, 680 Fifth Ave., New York, N.Y., 10019

ANNOTATION: In January of 1982, preliminary discussions were held with members of a task force from industry, business, and education to determine the type of information which would be most useful to corporate and education leaders in forging closer secondary school partnerships. It was determined that three areas could usefully be clarified via a survey: (1) the nature of the basic skills deficiency problem from educational and from corporate viewpoints; (2) the nature and results of precedents for cooperation on basic skills issues; (3) the level of willingness on the part of business and education to deepen and expand their cooperative efforts. The skill categories and competencies used in the survey are as follows:

Reading Competencies

- The ability to identify and comprehend the main and subordinate ideas in a written work and to summarize the ideas in one's own words.
- The ability to recognize different purposes and methods of writing, to identify a writer's point of view and tone, and to interpret a writer's meaning inferentially as well as literally.
- The ability to vary one's reading speed and method according to the type of material and one's purpose for reading.
- The ability to use the features of printed materials, such as table of contents, preface, introduction, titles and subtitles, index, glossary, appendix, bibliography.
- The ability to define unfamiliar words by decoding, using contextual clues, or by using a dictionary.

Writing Competencies

- The ability to organize, select, and relate ideas and to outline and develop them in coherent paragraphs.
- The ability to write Standard English sentences with correct:
  a. sentence structure
  b. verb forms
  c. punctuation, capitalization, possessives, plural forms, and other matters of mechanics
  d. word choice and spelling
- The ability to improve one's own writing by restructuring, correcting errors, and rewriting.
- The ability to gather information from primary and secondary sources; to write a report using this research; to quote, paraphrase, and summarize accurately; and to cite sources properly.

Speaking and Listening Competencies

- The ability to engage critically and constructively in the exchange of ideas.
- The ability to answer and ask questions coherently and concisely, and to follow spiken instructions.
- The ability to identify and comprehend the main and subordinate ideas in discussions, and to report accurately what others have said.
- The ability to conceive and develop ideas about a topic for the purpose of speaking to a group; to choose and organize related ideas; to present them clearly in Standard English.

Mathematical Competencies

- The ability to perform the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals, and integers.
- The ability to make and use measurements in both traditional and metric units.
- The ability to use effectively the mathematics of:
  a. integers, fractions, and decimals
  b. ratios, proportions, and percentages
  c. roots and powers
  d. algebra
  e. geometry
- The ability to make estimates and approximations, and to judge the reasonableness of a result.
- The ability to use elementary concepts of probability and statistics.

Scientific Competencies

- The ability to understand the basic principles of mechanics, physics, and chemistry.
- The ability to distinguish problems whose genesis is in basic mechanics, physics, or chemistry.
- The ability to apply basic scientific/technical solutions to the appropriate problems.

Reasoning Competencies

- The ability to identify and formulate problems, as well as the ability to propose and evaluate ways to solve them.
- The ability to recognize and use inductive and deductive reasoning, and to recognize fallacies in reasoning.
- The ability to draw reasonable conclusions from information found in various sources, whether written, spoken, tabular, or graphic, and to defend one's conclusions rationally.
- The ability to comprehaend, develop, and use concepts and generalizations.
- The ability to distinguish between fact and opinion.

SOURCE: Dr. James P. Greenan, University of Illinois, Dept. of Vocational and Technical Education, 345 Education Building, 1310 S. 6th St., Champaign, IL 61820

ANNOTATION: Based on an extensive review of literature and from personal interviews with content experts, Dr. Greenan has developed a list of skills which are potentially generalizable and are related to success in secondary vocational training programs.

Mathematics

- Read, write, and count whole numbers
- Add and subtract whole numbers
- Multiply and divide whole numbers
- Solve word problems with whole numbers
- Round off whole numbers
- Read and write fractions
- Add and subtract fractions
- Multiply and divide fractions
- Solve word problems with fractions
- Compute dollars and cents
- Read and write decimals
- Round off decimals
- Multiply and divide decimals
- Add and subtract decimals
- Solve word problems with decimals
- Read and write percents
- Compute percentages
- Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, and decimals to percents
- Solve problems using correct order of operations
- Solve word problems (mixed operations)
- Perform quick calculations for word problems
- Compute averages
- Read numbers or symbols from measuring scales
- Solve problems involving time
- Use a calculator
- Perform basic metric conversions

Communications

- Select, use, and identify words that mean more than one
- Identify, use, and write words by adding beginnings and endings to change their meaning
- Make and use shortened forms of words using an apostrophe to create contractions
- Make and use shorter forms of words
- Use the dictionary
- Use words which mean the same but are spelled differently
- Use words which are opposite of one another
- Use words which sound the same but are spelled differently
- Understand the meaning of words in sentences

- Use books to find information
- Understand spoken communication
- Interpret or give your explanation to spoken communication
- Pronounce words correctly
- Use good word choices
- Talk fluently
- Organize ideas while speaking
- Ask and answer the six w questions given a reading or speaking situation (what, where, why, when, who, and which)
- Give directions or information
- Use the telephone by finding names and telephone numbers in a telephone directory and yellow pages, and make local and long distance calls
- Understand the word-for-word meaning in a reading passage
- Interpret or give your meaning to a reading passage
- Read forms
- Read short notes, memos, and letters
- Read charts and tables
- Read manuals
- Write statements or phrases on forms
- Write sentences of forms
- Write sentences
- Write memos
- Take notes

Interpersonal Relations

- Use eye contact, attentive posture, gestures, while listening and speaking, and appear relaxed
- Identify behaviors which prevent good verbal communication
- Understand the main idea in another's communication
- Distinguish between fact and opinion in another's communication
- Respond to others by asking questions
- Restate what was said in a conversation
- Confirm one's own understanding of a conversation
- Pay attention to others' nonverbal cues
- Appear self-confident while communicating with others
- Maintain one-to-one conversation
- Maintain task-focused conversation
- State a point of view
- Maintain friendly conversation
- Join in group discussion
- Follow instructions or directions
- Give instructions or directions
- Give a demonstration of a skill
- Identify people's need for instruction by asking or watching their performance on the job

Reasoning

- Locate information about job duties, materials, and equipment
- Locate information about job methods
- Locate information about the proper ordering of procedures to perform a job
- Recall ideas
- Sort objects
- Estimate the time required to perform regular duties on the job
- Estimate weight of various objects of different shapes, sizes, and makeup
- Estimate length, width, height, or distance between objects
- Put work duties in proper order to complete a job
- Set job priorities for doing work
- Set job goals
- Determine activities to reach goals
- Decide about ways to achieve goals
- Set standards to measure the activities to meet goals
- Set the order in which work must be done to reach a goal
- Determine how a work activity will assist in reaching a stated goal
- Select the materials, tools, equipment, and methods to perform work duties
- Relate causes to problems in a simple work situation
- Identify potential problems given a specific set of facts
- Carefully examine possible methods to solve a simple problem situation
- Ask questions to identify the problem
- Use the senses of touch, see, smell, taste, and hear
- Determine important information for problem solving
- Arrive at several possible information statements or descriptions of a problem
- Select the best statement or description of a problem
- Determine several possible solutions to a problem
- Select a possible solution to a problem from a set of alternatives
- Given a written plan, update or revise it using information or events that have occurred

SOURCE: "Intervention Strategies for Coping with Transitions," The Counseling Psychologist, L.M. Brammer, P.J. Abrego, Vol. 9, No. 2, 1981, pp. 19-35.

ANNOTATION: The paper by Brammer and Abrego provides a framework for coping with transitions. A process model for transitions is developed that emphasizes easing the experience of loss, viewing change and hardship as a challenge, and developing skills to cope with future transitions. A taxonomy of coping skills is presented.

Perceiving and Responding to Transitions

- has a personal style of responding to change
- person can identify personal coping style

Assessing, Developing and Utilizing External Support Systems

- assessing an external support system: identify emotional needs, identify people who provide for emotional needs, describe a support network
- developing a personal support network: seek sources of support (persons), use social skills to establish relations to meet needs
- utilizing an established support network: developing stratigies for being with helpful people, apply social skills for using helpful people when a transition is anticipated or occurs

Assessing, Developing and Utilizing Internal Support Systems

- assessing the nature and strength of positive and negative self-attitudes: identify personal strengths, identify negative self-statements, assumptions and contextual cues which arouse same
- developing positive self-attitudes: affirm personal strengths, convert negative self-statements into positive self-statements when data and criteria warrant
- utilizing internal support system in transitions: see transitions as growth opportunities, identify tendency to blame self as causitive factor in distressful transition

Reducing Emotional and Physiological Stress

- practice self-relaxation
- control over-stimulation/under-stimulation
- verbalize feeling associated with transition

Planning and Implementing Change

- analyze discrepancies between existing and desired conditions
- exercise positive planning for new options: consider wide range of alternative actions, consider full range of objectives and their attendant values, weigh potential benefits and costs for each alternative, serach for relevant information for each alternative, use feedback to reassess one's preferred course of action, reexamine positive and negative consequences of alternatives, provide for implementation and execution of chosen course of action
- implement successfully action plan: identify stressors re implementation of goals, identify negative self-statements which interfere with implementation, use self-relaxation method during stressful periods of implementation, use self-rewards in goal attainment, identify additional skills needed to implement goals

SOURCE: The Teaching of Employability Skills by Nina Selz, 1980. The National Center for Research in Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210

ANNOTATION: As the work force changes, as workers get older and jobs get fewer, as people change jobs at a faster rate, and as the nation focuses on youth employability, certain questions about employability need to be addressed. What competencies are associated with getting and keeping a job? How important are they for getting along in the world of work? Where do young people and people making mid-career changes acquire employability skills? Which competencies are best developed at home, in the school, or on the job? Is there a basis for sharing the responsibility in teaching competencies related to work and working? Presented here are survey findings from a study of the general adult public, teachers, students, and employers concerning the teaching of employability skills and competencies in occupational adaptability.

Employability Skills: Competency Sets

Set I. "Doing what the man wants." These competencies pertain to traditional job values and expectations and include the following:

- have a good work attitude
- follow rules and policies
- follow job safety and health rules
- dress and act properly
- deal with pressures to get the job done
- get along with others
- work without supervision if necessary
- deal with unexpected things that happen
- use the tools and equipment a job calls for
- manage one's own time and activities
- get information about what is expected of you when starting a new job
- tell others what you are doing or want done
- use the reading, writing, and math skills the job calls for

Set II. "Getting yours." These competencies emcompass behaviors relating to job advancement and promotion, knowing employee rights, and self-evaluation. They are as follows:

- understand the extras or benefits offered at work
- understand wages and deductions on one's paycheck or stub
- figure out the cost of using one's own car or public transportation in getting to and from work
- ask for a raise in salary
- decide how and when to leave a job for another job
- use what one already knows to do a new or different job
- get promoted on the job
- manage one's own time and activities
- learn new job skills to get a different job or position
- know when one's own work is being done well
- be a member of a union or professional group
- know one's rights as an employee

Set III. "Taking charge." Competencies on this set related to active behaviors on the part of the worker and include these items:

- do things at work in a new way when one gets the chance
- take chances that may result in rewards
- get support from others to change things that need changing on the job
- figure out a better way to get things done
- persuade others to one's way of thinking
- be a member of a union or professional group
- know one's rights as an employee
- use materials and the knowledge of other people to develop one's job interests
- interview for different job positions when necessary
- know where to look for information about jobs one has or would like to have done
- tell others what you are doing or what you want done

Set IV. "Finding your niche." This set is described by job search skills and general job preparation activities and include these items:

- hold a job that matches one's interests and abilities
- get a job for which one has the training and background
- know if one wants to own a business or work for someone else
- use reading, writing, and math skills the job calls for
- know where to look for information about jobs one has or would like to have
- list job interests, skills, and experiences for an employer
- interview for different job positions when necessary
- fill out forms as required by law or by an employer
- do parts of the job one may not like to do

SOURCE: Occupational Adaptability and Transferable Skills by Frank C. Pratzner, 1978, The National Center for Research in Vocational Education. The Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210

ANNOTATION: Available evidence suggests that there is substantial mobility in the American labor force. However, job changing is neither inherently good nor bad; it's simply a significant feature of modern American life.

The idea that one set of occupational skills can be learned once and should last a lifetime does not seem to be valid. Thus, there is a need to help individuals at any age to prepare not only for a job, but for work careers characterized by change.

Surprisingly little is known about job mobility and job changing. However, skills alone do not determine mobility or adaptability.

Schools cannot prepare students for all unknown future contingencies. But it does seem reasonable to expect them to help students develop their individual attributes, potentials, or capacities to levels of proficiency useful in a wide range of situations. By such development they may be adaptable and better able to perform successfully in changing environments.

Having transferable skills will not guarantee successful adaptability, but should facilitate it. To the extent that individuals perceive similarities among jobs and are able to transfer their skills and knowledge effectively, the time and costs associated with supplemental training or retraining should be reduced and reflect a savings to employers and individuals alike.

All skills are potentially transferable to some extent and on some occasions. It was relatively easy to find existing examples of multiple-use, generally applicable skills and personal characteristics.

Because all skills are potentially transferable, the process of transfer, and especially teaching for transfer, is of paramount importance. The literature and research in this area provides little explicit guidance, and few recommendations for practice can be made with confidence.

Generic Skills

Mathematics Skills

- Whole numbers: Read, write, and count; add and subtract; multiply and divide; word problems; round off
- Fractions: Read and write; add and subtract; multiply and divide; word problems
- Decimals: Dollars and cents; read, write and round off; multiply and divide; add and subtract; word problems

Occupational Adaptability and Transferable Skills (continued)

- Percent: Read and write; ratio; proportion; percentage; rate; principal
- Mixed operations: Equivalents; order of operations; word problems; quick calculations; average
- Measure: Read graduated scales; read verniers; time; weight; distance; capacity
- Metric measure: Weight; distance; capacity; weight conversion; distance conversion; capacity conversion
- Geometric figures: Forms and figures; angles; draw, sketch; perimeters; areas; volumes
- Drawings and graphs: Read graphs; read scale drawings; read assembly diagrams; read schematic drawings; draw graphs; measure from scale drawings; draw to scale
- Algebra: Single variable, open sentences; single variable, powers and roots; solve given formulas; integers and rationals; variables and expressions; two variable, open sentences; quadratics
- Calculations: Logs; slide rule; trigonometry calculations; calculator

Communications Skills

- Words: Plurals; prefixes, suffixes, and root words; contractions and abbreviations; dictionary; synonyms, antonyms, and homonyms; meaning and context; books
- Listen: Literal comprehension; interpretive comprehension; evaluative comprehension
- Talk: Pronunciation; diction and word choice; fluency; organization of ideas; ask 6W questions; give information and directions; use telephone
- Read I: Literal comprehension; interpretive comprehension; evaluative comprehension
- Read II: Forms; notes; letters or memos; charts and tables; manuals; Roman numerals X; Roman numerals XXX; Roman numerals M
- Write III: Form letters single paragraph letters; internal memos; business letters; information reports; recommendation reports; technical reports

Occupational Adaptability and Transferable Skills (continued)

Interpersonal Skills

- Attending behaviors: Physical; cognitive; reactive; covert
- One to one conversation: Elementary conversation; task focused conversation; express own point of view; personable conversation; persuasive conversation
- Group discussion: Preparation; presentation of information or directions; control group decision making; group maintenance; participate in group discussion; respond to information or directions; persuasive presentation
- Oral presentations: Preparation; factual information; listen, respond; conceptual; persuasive; reactive
- Instructional communication: Establish training; instruction; demonstration; monitor; evaluate
- Supervisory communication: Give directions; demonstrate; give praise; give discipline; prepare evaluation reports
- Interview/counsel communication: Preparation; closed questions; open questions; confrontation; interview customers; interview job applicants

Reasoning Skills

- Obtain job related information: Tools, materials, and equipment; methods and procedures; sequence; other information; theories
- Organize information: Sort objects; sort data; rate; rank; develop classifications
- Estimate: Time; weight; distance; area; capacity; cubic measures; costs
- Tasks: Sequence; priority
- Objectives and methods: Goals; activities; alternatives; criteria; priority; analysis; deduction
- Diagnosis: Cause and effect relationships: possible problems; priorities; possible methods; probing questions; use senses
- Problem solving: Relevant information; alternative statements; select statement; alternative solutions; select alternative
- Plan and coordinate: Activities and sequences; outline plan; identify resources; estimate resources; critical activities; detailed plan; resource requisitions

Occupational Adaptability and Transferable Skills (continued)

- Implement work: Monitor results; standards of quality; standards of quantity; standards of completeion time; priorities of standards; authority and responsibility; update plans

SOURCE: The Paideia Proposal. Adler, Mortimer J. New York, NY: Macmillan Publishing Co., 1982.

ANNOTATION: The Paideia Proposal emphasizes three objectives: (1) Basic schooling should prepare students to take advantage of every opportunity for personal growth and self-improvement--mentally, morally, and spiritually; (2) Basic schooling should adequately prepare students to discharge the duties and responsibilities of citizenship; (3) Basic schooling should take account of adults' need to earn a living on one or another occupation.

GOAL: Acquisition of Organized Knowledge

- Language, literature, and the fine arts
- Mathematics and natural science
- History, geography, and social studies

GOAL: Development of Intellectual Skills--Skills of Learning

- Reading, writing, speaking, listening
- Calculating, problem-solving, observing, measuring, estimating
- Exercising critical judgment

GOAL: Enlarged Understanding of Ideas and Values

- Discussion of books (not textbooks) and other works of art
- Involvement in artistic activities (e.g., music, drama, visual arts)

Note (from p.21): "To give the same quality of schooling to all requires a program of study that is both liberal and general, and that is, in several, crucial, overarching respects, one and the same for every child. All sidetracks, specialized courses, or elective choices must be eliminated. Allowing them will always lead a certain number of students to voluntarily downgrade their own education.

"Elective choices are appropriate only in a curriculum that is intended for different avenues of specialization or different forms of preparation for the professions or technical careers. Electives and specialization are entirely proper at the level of advanced schooling--in our colleges, universities, and technical schools. They are wholly inappropriate at the level of basic schooling.

"The course of study to be followed in the twelve years of basic schooling should, therefore, be completely required, with only one exception. That exception is the choice of a second language."

SOURCE: Interview with Kathy Long, Head of General Motors' Organizational Research and Development, 3044 W. Grand Blvd., Detroit, Michigan 48202. December, 1982.

ANNOTATION: The interview centered on General Motors' Employee Participation Groups, which were designed to improve communications, increase teamwork, reduce absenteeism, reduce expenses, improve safety conditions, improve product or service quality, develop improved leadership and problem-solving skills, and improve morale. The groups solve job-related problems, not psychological ones.

Skills, Knowledge, and Attitudes Needed for Successful Participation in General Motors' Employee Participation Groups

- Problem solving skills, both individual and group
- Personal awareness of values, attitudes, and expectations of self and others
- Understanding of group dynamics
- Job competency skills
- Promptness
- Perseverance
- Openness to change
- Understanding of interdependence of all workers and management
- Openness to feedback
- Interpersonal skills

Note: It is a function of GM supervisors to reward the participation groups as well as individuals, and they must recognize the groups' importance.

SOURCE: Methods and Materials for Teaching Occupational Survival Skills. Springfield, IL, Illinois State Board of Education, 1979.

ANNOTATION: For entry level skills or for helping people in the work force to improve their present work skills.

- punctuality
- dependability
- getting along with others
- working as a team member
- organizing the work activities of others
- understanding written information
- basic writing skills
- basic speaking skills
- being neat and clean in appearance
- maintaining good health
- knowing your strengths and weaknesses
- giving an honest day's work
- loyalty to your organization
- making independent decisions
- using initiative and imagination
- knowing what is expected
- basic arithmetic skills
- knowing how to use materials and equipment
- locating information
- having specialized training
- knowledge of operating procedures
- following instructions
- working without close supervision
- working under pressure
- adjusting to work situations
- managing time and materials effectively
- following safety regulations

SCURCE: Adaptation to Work. The National Center for Research in Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210. 1980

ANNOTATION: A problem faced by many workers in the American labor force is that of adapting to the demands and responsibilities of a new job. This would seem to be a particular problem for young workers who change jobs more frequently than do older workers.

Schools can play an important part in preparing youth to deal with changes in jobs and work situations and in developing skills and abilities that are useful in different settings. In order to aid schools in their efforts to better prepare youth for work, answers are needed to questions like the following: What are the major aspects of jobs and work settings that are common to different jobs and that affect successful job entry and adjustment? What adjustment problems are encountered during the initial employment period? What strategies and approaches are used by young adults to adapt to various situations and demands encountered in new jobs? What factors characterize individuals who achieve different levels of adaptation?

This study was conducted in order to address some of these questions and to develop a better understanding of the concept of occupational adaptability. The two major objectives of the study were:

1. to measure various levels of adaptation to work (adaptive outcomes) and their relationship to training and work experience variables;

2. to identify and describe the processes (behaviors and strategies) employed by young workers in adapting to new job situations.

Five Aspects of Work Linked to Adaptability

- Organizational Aspects: Those aspects of work related to a worker's knowledge or compliance with the formal and informal rules, policies, regulations, procedures, and benefits that exist in the organizational environment not directly related to the performance of one's job tasks.

- Performance Aspects: Those aspects of work related to the worker's skills or knowledge necessary for adequate job performance and adjustment to changes in job content.

- Interpersonal Aspects: Those aspects of work related to satisfactory relationships with others in the work environment, either in a social or job-related capacity. Such relationships might be indicated by evidence of mutual support, open communications, and a sense of belonging to the group.

- Responsibility Aspects: Those aspects of work related to desiring and taking on responsibility in the job, taking advantage of on-the-job training, seeking advancement in the job, showing initiative, and so forth.

Adaptation to Work (continued)

- Affective Aspects: Those aspects of work related to emotions or attitudes that supply a worker with positive feelings (e.g., satisfaction, accomplishment) or that relate to the worker's feelings of commitment to the job and to how that individual fits in.

SOURCE: Functional Competencies for Adapting to the World of Work. The National Center for Research in Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210. 1980

ANNOTATION: The study was to investigate the public's perception of the importance of functional competencies for doing well in work and in live and to examine where the public perceived these competencies should be taught. Priorities of competencies were established for considering what should be included in curricula and in instructional materials.

Functional Competency in Occupational Adaptability

- Be able to use basic academic skills
- Be able to use the tools and resources the job calls for
- Be able to communicate with others
- Cope with stress and pressure
- Comply with set regulations and policies
- Demonstrate appropriate attitude toward work
- Show ability to complete job assignment
- Follow appropriate safety and health rules
- Match interests, aptitudes, and abilities to specific occupation
- Know educational and training prerequisites

Functional Competency in Consumer Economics

- Figure costs and make change
- Budget for monthly expenditures
- Open and maintain checking accounts
- Keep accurate records for tax purposes
- Keep goods in repairs and upkeep
- Determine buys necessary for maintenance of living
- Know that opening charge accounts is a way to establish credit

SOURCE: Minimum Competencies and Transferable Skills. The National Center for Research in Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210, 1978.

ANNOTATION: What are those skills that are transferable not only from occupation to occupation but also from one life area to another? Some are cognitive, some are affective, some are psychomotor. Cognitive skills are needed for every school subject and for every life area. Affective skills are equally important for getting along in school and in life. Psychomotor skills are needed for many school subjects and in many life areas. These skills range from sensory perception to simple actions to complex movements requiring considerable skill. Their list of transferable skills, with selected examples, follows.

COGNITIVE

Communications

- Read and evaluate
- Write technical reports
- Speak fluently
- Listen attentively

Mathematics

- Read graphs
- Determine equivalents
- Compute ratios
- Solve word problems

Reasoning

- Develop classifications
- Make decisions
- Outline plans
- Set priorities

AFFECTIVE

Attitudes toward Work

- Responsibility
- Diligence
- Determination/perseverance
- Reliability

Attitudes toward Self

- Self-confidence
- Self-discipline
- Self-actualization
- Assertiveness

Attitudes toward Others

- Converses pleasantly
- Reacts to others
- Manages others
- Gives praise

PSYCHOMOTOR

- Measure distance
- Draw graphs
- Operate calculator
- Use senses

SOURCE: Affective Work Competencies for Vocational Education, The National Center for Research in Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210. 1978

ANNOTATION: Recognizing the importance of a curriculum that facilitates the acquisition of desirable, affective work competencies (work attitudes, values, and habits) as well as specific job skills, a study was conducted to review and synthesize what is known about the social and psychological aspects of work and to identify specific affective work competencies that are desirable and common for vocational education programs. The literature review focused on the historical and theoretical perspectives which relate to understanding the behavior of individuals and groups; it also examined the empirical data related to affective work competencies identified by employers, educators, and experienced employees. Based on the combined investigations conducted by industry and education, a variety of affective work competencies was identified.

Affective Work Competencies Listed by Industry and Educators

Listed by both industry and educators:

- punctuality
- cooperativeness
- capability
- follows directions
- responsibility
- emotional stability
- initiative
- honesty
- dependability
- helpfulness
- loyalty
- adaptability
- efficiency
- ambition
- quality of work
- dedication
- reliability
- accuracy
- perseverance
- judgment
- concentration
- carefulness
- cheerfulness
- enthusiasm
- independence
- quantity of work
- intelligence
- personal appearance
- alertness
- devotion
- recognition

Listed only by industry:

- leadership potential
- courtesy
- pleasantness
- responsiveness
- personality
- endurance
- tolerance
- shyness
- tender-mindedness
- overall job performance

Listed only by educators:

- health
- creative
- consideration
- speed
- influence
- orderliness
- patience
- poise
- interest
- curiosity
- forcefulness
- activeness
- awareness
- resourcefulness
- appreciativeness
- perceptivity
- achievement
- compensation
- variety
- security
- working conditions
- friendliness

SOURCE: Peterson, Richard. "An Employer's Concern for Occupational Adaptability." In Occupational Adaptability: Perspectives on Tomorrow's Careers. The National Center for Research in Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, Ohio, 43210, 1979.

ANNOTATION: The purpose of the study was to define transferable skills of occupationally adaptable nontraditional managers at AT&T. One broad goal within AT&T was a program to facilitate the movement of management women who have traditionally been employed in non-technical areas of business, so they could move into more non-traditional technical areas. The findings at AT&T were contrasted to A.A. Wiant's work, done in 1977.

AT&T Skill List	Skills from Wiant, 1977
• Maintaining upward communications • Maintaining downward communications • Maintaining peer communications • Providing written communications	• Communicating
• Involvement with meetings • Community relations	• Working with others
• Problem solving	• Problem solving • Analyzing/assessing
• Planning the job • Managing the job	• Planning/layout
• Controlling the job	• Organizing
• Developing subordinates • Providing performance feedback	• Managing others
• Decision making	• Decision making
• Creating a motivative atmosphere	• Positive work attitude

SOURCE: Quality Assurance in the Preparation of Youth for Work, Consortium on Education for Employment, Nov. 1981, National Governor's Association, Hall of the States, 444 North Capitol Street NW, Washington, D.C. 20001

ANNOTATION: The report states that the credibility of our nation's public education, and employment and training systems is on the line. The producats of these systems, it is said, do not have the skills, attitudes and knowledge needed to meet the demands of today's society. Of particular concern here is the fact that many new entrants to the workforce are unprepared to perform entry level tasks and still more are too limited in their preparation in employment to jobs requiring higher level skills. Improvements are needed in management and quality assurance processes in the following areas:

- adoption of competency-based education and training delivery systems,
- implementation of management information systems that are able to track individual skills acquisition across program and institutional lines, and
- establishment of broadened peer review mechanisms that involve educators and the private sector.

Occupational Competencies

- Educational skills: basic computational, communication, and reasoning skills as well as more advanced levels of educational achievement.
- Employability skills: a basic awareness of the world of work and career alternatives, career decision making and job search skills, as well as demonstrated ability to apply skills on the job in a manner that meets employer expectations.
- Occupational skills: a range of functional and knowledge skills required to perform tasks related to a specific occupation or cluster of occupations.

SOURCE: "A model for Analyzing Human Adaptation to Transition" by Nancy Schlossberg, The Counseling Psychologist, Vol 9, No. 2, 1981, pp. 2-18.

ANNOTATION: As people move through life they continually experience change and transition. Schlossberg's research shows that individuals differ in their ability to adapt to change. For example, job loss may stimulate one person to develop new interests and take up new activities, but lead another to a dead end marked by inactivity, boredom, and feelings of worthlessness.

Perception of Transition

- role change: gain or loss
- affect: positive or negative
- source: internal or external
- timing: on time or off time
- onset: sudden or gradual
- duration: permanent, temporary, or uncertain

Characteristics of Pretransition Environment

- internal support: intimate relationships, family unit, network of friends
- instutional support: occupational organizations, religious institutions, political groups, social welfare groups, community support groups

Characteristics of Posttransition Environment

- internal support: intimate realtionships, family unit, network of friends
- institutional support: occupational organization, religious institutions, political groups, social welfare groups, community support groups

Characteristics of Individual

- psychosocial competencies
- sex and sex role identification
- age/life stage
- race/ethnicity
- socioeconomic status
- value orientation
- previous experience with transition of similar nature

SOURCE: The Three Boxes of Life and How To Get Out of Them. Bolles, Richard N. Berkeley, CA: Ten Speed Press, 1978.

ANNOTATION: What is listed below is Sidney Fine's three basic skills families: (1) Self-management skills are rooted in temperament and are acquired in early years among family, peers, school, or in later life by intensive education; (2) Functional skills are transferable skills, rooted in aptitudes, and are acquired either as natural-born talent refined by experience and education, or by specific educational, vocational or avocational special training; (3) Work-content skills or specific content skills are rooted in personal experience and preference and are acquired by private reading, apprenticeship, technical training, schooling, or on the job.

Self-Management Skills

- regularity
- dependability
- initiative
- resourcefulness
- self-reliance
- self-respect
- cooperation
- flexibility
- sense of humor

Functional or Transferable Skills

- problem-solving
- analyzing and synthesizing data
- data compilation and computation
- human relations skills
- taking instructions
- helping others

Work or Specific Content Skills

- performing a particular job
- knowledge of how to maintain good physical and mental health
- how to deal with emergencies
- financial planning and management
- making use of information from radio, TV, newspapers, magazines, books, and from other people

SOURCE: "A Cognitive-Developmental Model of Career Development," by L.L. Knefelkamp and R. Slepitza, in The Counseling Psychologist, 1976, Vol. 6, No. 3, pp. 53-58.

ANNOTATION: The Knefelkamp and Slepitza model postulates that students move from a simplistic categorical view of career through four stages culminating in a complex, pluralistic view of career. The movement of students through these stages can be predicted and described through the unfolding of nine variables, which are listed below.

Nine Variables Which Affect Career Planning

- Locus of Control--the external-internal sources which students use to define themselves and environments.
- Analysis--the individual's ability to break down a decision into it diverse elements and to consider cause and effect relationships.
- Synthesis--the individual's ability to integrate the diverse aspects of a problem or decision into a whole.
- Semantic Structure--the continuum of absolute-open verbs and qualifiers students use in their written and spoken expressions.
- Self-Processing--the ability to examine oneself and take into account one's defining factors.
- Openness of Alternative Perspectives--the degree to which a student knows about and considers alternative points of view about options.
- Ability to Assume Responsibility--the student's willingness to accept the consequences of actions or decisions taken.
- Ability to Take on New Roles--the student's ability to accommodate the characteristics of new roles or activities.
- Ability to Take Risks with Self--the student's ability to risk self-esteem when new learnings and experiences so demand.

SOURCE: Education and Identity by Arthur W. Chickering, Jossey-Bass Publishers, San Francisco, 1978.

ANNOTATION: Chickering strongly recommended that schools do more than prepare students to pass exams and to become skilled workers. Students must be prepared for a complex and constantly changing technological society. Education can make a difference in human development and in helping people get along, earn a living, and raise a family.

- developing competence
- managing emotions
- developing autonomy
- establishing identity
- maturing interpersonal relations
- developing purpose
- developing integrity

SOURCE: "On Thinking About the Future," by Diane Ravitch, in Kappan, Vol. 64, No. 5, January 1983, pp. 317-320

ANNOTATION: Ms. Ravitch takes a backward glance in an attempt to warn of the hazards of future-thinking about the nature of the schools. Our problem, she says, is simply in reaching agreement about where we want to do.

"Because most work in the future will require people who can think plan, adapt to changing conditions, and make dicisions, we will look to the schools to nurture in the young such traits as initiative, advanced reasoning skills, judgment, independence, and self-discipline. Instead of job training, young people will want to learn specific skills for such leisure activities as woodworking, cooking, book-binding, weaving, and other handicrafts" (p. 320).

Needs for the Future

- math
- science
- reading
- writing
- computer literacy
- history
- social studies
- citizenship
- literature
- aesthetic appreciation and participation

SOURCE: Maslow, Abraham H. "The Creative Attitude," The Structurist, Vol. 3, 1963, pp. 4-10.

ANNOTATION: This article by Maslow states that educators must give up "the tried and true methods of the past in favor of trying to create a new kind of human being who is comfortable with change, who enjoys change, who is able to improvise, who is able to face with confidence, strength and courage a situation of which he has absolutely no forewarning."

Attributes of a Creative Person

- Flexibility and the ability to improvise
- Confidence in own abilities
- Inspired to produce something
- Self-disciplined
- Not self-centered
- Accepting and not overly critical
- Trust in self and others

SOURCE: "Behavioral Self-Control and Educational Practice or Do We Really Need Self-Control?" by Thomas J. Coates and Carl E. Thoresen, in Review of Research in Education by David Berliner, Washington D.C.: American Research Association, 1979.

ANNOTATION: Behavioral models have emphasized the need to study and specify functional relations between environmental and cognitive events and self-controlling actions, and the behavioral and environmental outcomes these self-controlling actions produce. Procedures derived from behavioral models of self-control have produced important but limited effects with children and adolescents.

Self-Control

- self-observation
- goal-setting
- accurate self-evaluation
- maintenance
- self- vs. external standards
- attributional processes
- criterion-setting
- reinforcement processes
- processes involved in decisional self-control
- processes involved in protracted self-control

Personal Sources of Influence

Attention-Perceptual Skills
- Noticing and attending to relevant stimuli and not attending to irrelevant stimuli
- Observing and imitating behaviors of others
- Noticing and attending to rapid changes in the environment

Analytic Skills
- Remembering and retrieving specific information
- Observing behavior of others and abstracting general principles to guide later behavior
- Problem-solving and decision-making
- Analyzing relationships between specific environments and probable behavior in that situation
- Evaluating personal abilities to perform needed behaviors in problem situations
- Analyzing relationships between personal actions and environmental consequences
- Modifying beliefs about relationships between behavior and environment stimuli in relation to ongoing experience

Imaginal Skills
- Using imagination as memory aid
- Using imagination to form novel associations and ideas
- Using imagination to plan and rehearse action plans

Language Skills
- Expressing oneself in ways appropriate to situations and persons
- Making and carrying out statements of intention
- Expressing personal objectives and negotiating demands
- Using speech to facilitate appropriate and relevant behavior in problem situations

Behavioral Production Skills
- Generating behavior appropriate to specific goals, situations, and persons
- Remembering and retrieving and complex sequences of behavior
- Rearranging the physical environment to meet specific objectives

Personal Evaluation Skills
- Setting personal standards; evaluating personal actions; commending oneself for meeting goals
- Experiencing personal dissatisfaction when goals are not met or standards are violated